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LECTURES

ON THE

THEORY AND PRACTICE OF MIDWIFERY,

DELIVERED AT GUY'S HOSPITAL BY

DR. BLUNDELL.

Contracted Pelvis.

THE distorted pelvis, Gentlemen, contracted in high degree, is by no means frequent in obstetric practice; but those coarctations, which are accompanied with little or no distortion, and in which the contraction is slighter, are by no means uncommon; and more especially are they liable to be met with in large manufacturing towns, as Glasgow, for example, Leeds, Manchester, or this Metropolis. On this account, therefore, although upon the table and in the theatre these contractions make but little show, they become peculiarly deserving the attention of the obstetric student; and I proceed, therefore, to remark a little upon them.

When contractions of the pelvis are occurring in the slighter degrees, those contractions, as you will find from examining our museums, may affect any part of the bony structure; and sometimes it is the *false pelvis*, that is the seat of the contraction; and sometimes the *brim*, or the *cavity*, or the *outlet*, of the true. It deserves remark, however, that the contractions of the *true pelvis* only are of much importance in the practice of midwifery. And further, that of the contractions of *the true pelvis*, those which create the most frequent difficulties, and which, at the bed-side, are found the most frequently to require the use of instruments, are almost invariably found at the *brim* of the pelvis—a fact this of great interest; and therefore, whenever you suspect that there is a pelvis contracted in such a degree that the lever, the forceps, or the perforator, may be requisite, the brim is the part of that pelvis that you should first, and most carefully, examine. To this I may add, that when those contractions are occurring at the brim, it *rarely happens* that they lie *between* the *sides* of the pelvis; they are found *almost invariably between the front and the back*, (terms which I use in a laxer sense,) as in the pelvis I now show you. And this contraction between the back and front, may be produced either by the approximation of the symphysis pubis to the promontory of the sacrum, as you see here, or else by the thrusting of the acetabula towards the promontory of the sacrum. When the contraction of the pelvis arises from the former cause, no distortion whatever is observed; but when it is produced by the latter, namely, by the pushing in of the acetabula, then, together with contraction, some loss of symmetry will be noticed. This you have an opportunity of seeing, in some of the pelves which I now exhibit to you; and, first, I show you the standard pelvis of full size. On laying the child's head into it, the capacity evidently appears too great to require the use of forceps. In the second place, I show you a pelvis slightly contracted at the brim. The outlet here is capacious enough, but at the brim, between the front and back, it is as usual contracted, the symphysis pubis being pushed upon the promontory of the sacrum. On putting the head into this pelvis, you may observe that it completely fills the space between the sacrum and the symphysis; so that if the head were large, and the pelvis small, the fœtus could not be abstracted without the help of instruments, the forceps, for example, or the lever. I show you, in the third place, a pelvis still more contracted than the preceding, in consequence not merely of the advance of the promontory of the sacrum towards the symphysis pubis, but of the retreat of the acetabula through a pelvis like this. The head would not come down, unless previously reduced by that dreadful instrument the perforator. Here, lastly, is a pelvis, in which you see the contraction again in much higher degree, approaching, indeed, to the former class of coarctation, the distorted, I mean, occasionally demanding even the *Cæsarean operation*.

There is one other remark which I add—I might have made it before—upon the subject of these contractions; and this is, that they are sometimes *very partial*—a fact which I find important in my own practice. It sometimes happens, that the outlet of the pelvis alone is the seat of the contraction; but this is not common: much more frequently we find contraction of the brim, while the outlet is capacious enough. Now, in cases like these, the fœtus is sometimes very unexpectedly expelled. Let the womb act, let the child's head advance but one inch perhaps, and after some hours of labour, when the delivery is unlooked for, suddenly the head bursts into the world, while the accoucheur, engaged in washing, or dressing, or refreshing, returns to be informed, that during his absence the fœtus has been expelled. Here, for example, is a pelvis, in which the outlet is most capacious, while the brim is contracted to such extent, that reduced by the perforator, the head could scarcely be abstracted, unless the operation were performed in the seventh or eighth month, when the cranium is small.

Thus much, then, respecting the obstetric anatomy of the *contracted* pelvis. Recollect that all parts of the pelvis are liable to be contracted in a greater or less degree, but that those contractions requiring the use of the instruments are usually at the brim. Recollect also, that those contractions which are lying at the brim may now and then be placed between the one and the other side; but that contractions requiring instruments are rarely so situated, being found almost invariably between the front and the back. Recollect further, that these contractions between the front and the back are produced by two causes; the one the pushing of the symphysis pubis toward the promontory of the sacrum, the other the thrusting inward of the acetabulum on either side; the latter contraction being attended with a certain degree of distortion, as you will observe from the specimen before you. Recollect, lastly, that when the contractions occur, they are sometimes,—and this is a practical fact of no small importance,—they are sometimes confined; they may be placed at the outlet, to a particular part of the pelvis; but are more generally found at the brim, so that if the head once pass the brim, whether under the use of instruments, or by the natural efforts, all further difficulties vanish.

When the pelvis is contracted, the birth is more or less obstructed, especially if the fœtus be larger than ordinary; but in these difficulties, the rules of management are, I think, simple and intelligible. If no dangerous symptoms appear, we ought to give a fair trial to the full efforts of the uterus for four-and-twenty hours after the discharge of the liquor amnii, abstaining, as long as may be, from the use of instruments, for they are great evils, and a meddlesome midwifery is bad. But should dangers arise referrible to the prolongation of the labour, or should the woman be in labour for twenty-four hours after the discharge of the liquor, the head not advancing, you would then, if skilful, be justified in making trial of the lever or the forceps, constrained by any overbearing necessity. Or further, should the dangerous symptoms become pressing, or should the womb have been in action for eight-and-twenty hours, the head still not advancing, the lever or forceps having failed, though used by the most dexterous hands within reach—perforation, a dreadful operation, of tremendous responsibility, would, I conceive, become justifiable. Or lastly, should a woman, losing half a dozen children successively, in consequence of deficient room, yet again become pregnant; under such circumstances an attempt might be made to facilitate her delivery, and save the fœtus by inducing parturition at the end of seven months and a half, when the parts of the fœtus are small, and its powers sufficiently great to render its preservation probable. Instruments, remember, are never to be used but with reluctance, and when the necessity is inexorable, when conscience tells you that you would wish their employment in the case of your nearest relative, or of those still dearer.

There are *three principal causes* by which the distortions of the pelvis considered on the preceding morning, and the contractions on which we have just been making our observations, are produced; and these three causes are *mollities ossium*, *rickets*, and the *fracture* of the bones. It sometimes happens, though rarely happily, that the skeleton is attacked by a disease generally fatal, under which the *animal* matter *predominates* and the *osseous* matter is *deficient*; the result is a *softening* of the bones, so that yielding like tempered wax they become distorted in every part of the skeleton to which pressure is applied. A specimen of such a pelvis I now exhibit to you. It far more frequently happens in unhealthy situations, and where the children are pale and weakly, and ill nourished, that the form and capacity of the pelvis is altered in consequence of rickets, a disease allied to mollities ossium, except that it is confined principally to the earlier period of life. Here you have as before the animal matter redundant, and the osseous matter deficient, and some softening of the bones is produced. Now the contractions of the pelvis, where you have not the higher degrees of distortion, are, I think, principally occasioned in this manner by rickets; and on this account, where children are known to be ricketty, female children espe-

cially, you ought to give particular directions that they be not put too early to the ground. It is wrong even in the case of males, but by putting a young female, when prone to rickets, to the ground too early, you may give rise to one of those contractions of the pelvis which may be the torture of her future life. Fracture of the bones is not a common cause of their distortion; now and then, however, it occurs, and where it does, usually gives rise to the higher degrees of contraction, as in the case I was narrating to you in the preceding lecture.

Small Pelvis.—Ayesha, the favourite wife of Mohammed, was married at nine years of age. Patriarchs and Apostles have their privileges. If a girl become early impregnated, as in the Eastern countries, at the age of twelve or thirteen years, for example, in common with the other parts of the skeleton, the pelvis will be small; and of course the pelvis will be of small size if the woman, though of full age, be of *dwarfish* stature. By a small pelvis then you are here to understand, a pelvis which preserves its proportions and symmetry, but in which all the measures are unusually short. Here is a skeleton of this kind, a very excellent specimen; and in order that you may the more readily perceive its diminutive size, I place it beside the standard. When the pelvis is small, the woman is small, the child is small, and the parts corresponding with each other, parturition becomes easy; but this, however, is not invariably the case, and thence sometimes difficulty arises. A woman with a small pelvis has occasionally the misfortune to produce very large fœtuses; I myself know a woman, not exceeding the ordinary stature, who has produced several children, one of whom, to my own knowledge, weighed eleven pounds at birth, and the other nearly seventeen, though the general weight is only seven. Unhappily for females who are of a small size, the stature, or other qualities of the father, seem to have an effect upon the child. A friend of mine had in his possession two dogs, one of them a somewhat small bitch of the Danish breed, such as you see running after our carriages, the other from Newfoundland, an unusually large animal, and a male. Unluckily for the female a connexion was accomplished between them, and six puppies were produced; of those, three were expelled, not apparently without much difficulty, but the other three remaining could not be emitted, so that the poor animal died undelivered. Now this I state to you, first, as an example of the difficulty of parturition occurring in an animal; and secondly, and principally, for the purpose of satisfying you that the largeness and other qualities of the male parent, like those of the female, may influence the bulk of the fœtus. But you will ask me, perhaps, what is to be done if a woman have a very small pelvis and a very large fœtus? Why, that is to be done which you would find necessary in a case of contracted pelvis; you must proceed exactly on the same principles: and this simplifies and narrows my observations. You may be compelled to use instruments, but do not officiously and pragmatically interfere; give a fair trial of four-and-twenty hours to the natural efforts if no dangerous symptoms appear; if the natural efforts fail, or dangerous symptoms manifest themselves, make use of the lever, or forceps; if they do not succeed, and dangerous symptoms attack the patient, or if the woman have been in labour six-and-thirty, or eight-and-forty hours, lay open the head of the child by embryotomy: a repetition this of the rule before prescribed.

Large Pelvis.—As a pelvis may be small in all its dimensions, so also, on the other hand, we sometimes meet with those that are *unusually capacious*, a very extraordinary specimen of which I now exhibit; to some giantess, you might suppose, this pelvis had belonged—to one of the larger daughters of Anak. By placing beside it a small pelvis, its extraordinary bulk is rendered more conspicuous; large in all its dimensions, a pelvis like this will not of course give rise, in ordinary circumstances at least, to difficulty during labour. But there are other evils not to be despised, and which are produced by this deviation from the standard. Having a large pelvis, women become more obnoxious to a disease called *retroversion uteri*, the nature of which may be more fully considered hereafter. Under this disease the *womb*, in the third or fourth months, having acquired the size of the head of a large full-grown fœtus, will now and then change its position, the *fundus* lying below the promontory of the sacrum, and the *mouth* rising and advancing. Now to this displacement all women, indeed, are obnoxious, but those more especially of whom the pelvis is large, there being more room for the retroversion to take place.—Among the evils then resulting from a large pelvis, set this down as one not to be forgotten: the greater facility with which the womb becomes retroverted.

There is another disease to which all women are exposed, those however more especially who have a large pelvis, and in whom the parts are relaxed; and this troublesome affection is the descent of the womb. Varying in the degree of descent, the womb sometimes comes down a little way only, and sometimes just appears through the outlet in front, and sometimes lies out a considerable distance between the thighs. Now this descent of the uterus, to which I have said all females may be subjected

when the parts are relaxed, occurs certainly most frequently where the pelvis is capacious, and not only in the *earlier*, but sometimes in the *later periods*, of gestation. There is a case related in which the womb, during labour, actually protruded beyond the external parts before the mouth was fully opened, so that the *os uteri* could be distinctly seen, and the child behind it; in this case the pelvis was over capacious. You may, therefore, set down, as a *second evil*, resulting from this over capacity of the pelvis, the greater facility with which the *prolapsus of the uterus* is apt to occur in maids, and mothers during gestation or in the unimpregnated state. But of all the evils resulting from the largeness of the pelvis, the last which I shall mention, and the most important, is the *unexpected* and *sudden* manner in which the child is sometimes pushed into the world. A woman is walking in the street; she attempts to cross to the other side, perhaps a little agitated, and the child drops from her. In a carriage the motion of the vehicle is considerable, from the roughness of the road, the street not *Macadamized*, (laughter) and the child comes away. The woman feels an irritation of her bowels, not uncommon when parturition is about to commence; she retires, makes an effort, and loses her child. Dr. Lowder used to relate a case which is well illustrative of this, and calculated to make a useful impression on the mind:—A patient of his had a pelvis unusually capacious; the softer parts were relaxed; she was the mother of many children. He called on her to know whether she had any pains about her, desirous not to be out of reach when labour might supervene; she had none; he returned promptly to his own house, which was where I now reside, and by the time he reached the door he found the husband had arrived, there too to tell him that the child was born, adding, that when he left the house the lady, in crossing the floor of her drawing room, was seized with the *single pain*, by which the fœtus was expelled. And thus it is by no means improbable, when the parts are relaxed and the pelvis is capacious, that the child may unexpectedly be expelled, and precipitated into situations of most imminent danger.

Now this enables us to answer a question, which may be put occasionally in a court of justice, and to which you should always be prepared with a reply, namely, whether it be possible that a woman may be delivered without knowing that labour is about to occur at the time. I will suppose that a woman becomes the unfortunate subject of an illegitimate pregnancy; I will suppose further, that moved by that modesty which seems to be ingenerate in the sex, she is induced, without evil design, to delay a disclosure till delivery render it inevitable. I will suppose, too, that a woman thus circumstanced, with a pelvis which is capacious, with a fibre which is thoroughly relaxed, feeling bowel irritation, retires; the womb acts, the fœtus is at once precipitated; she hears no cry, she deems it lost; she has a moment to take her determination,—she decides amiss; she has not the resolution to step forth and promulgate her shame. But circumstances create suspicion; the child is discovered; she is summoned into court. Then comes the question for the accoucheur, is it possible for the child to be precipitated before the mother is aware? To this it may be replied, that if the pelvis be large, and if the softer parts be relaxed, it is not only possible, but in a manner probable. On occasions like these, I conceive, substantial justice requires that women should have the full advantage of every leaning in their favour. The laws and customs of mankind are of the masculine gender. Who are the legislators is very obvious. Not to mention the male tyranny of Asiatic, or semi-barbarous nations,—notwithstanding the influences of chivalry; our own system, with respect to woman, is austere enough, perhaps oppressive. Unmarried, perhaps, because the over-wrought civilisation of society renders a family a burden; solicited, because the lawgivers and custom-makers assume to themselves, without shame, a sexual licence, their boast often instead of their infamy. Deprived of caste, like a contaminated Indian, if the offence be detected, with no effective public provision for the foundling, a woman becomes a mother, and is driven on a crime the most revolting to maternal instinct. Law follows; the crime is execrated; the culprit is suspended to the gallows by the very sex which has so large and solid a share in the offence; the very sex which, in this country, has turned the accoucheur, with his perforator, loose upon society to open the heads of living children without accounting to any, and then——to dinner. But all this is unavoidable; be it so. Let it be remembered then, that of these unfortunate creatures some are to be looked on rather as victims than criminals.

Thus much, then, respecting the different forms of pelvis, so far as they are interesting to the accoucheur; the standard, the large, the small, the contracted, the distorted—specimens of all of which I now place before you. Other varieties of the pelvis you will also meet with in practice, but they are of so little importance that I forbear to dwell upon them. Sometimes the *wings* of the *ossa innominata* are unusually *spread out*, and in other cases you will find them *more erect*. In general I have said the

brim is oval; sometimes it is rounded. In some pelves you will find the spines of the *ischii* long, and penetrating far into the cavity. I have already told you, that the coccyx, consolidated by osseous matter, may be at right angles with this bone, so as to occasion an obstruction. Now and then osseous matter is placed on the promontory of the sacrum, giving rise to difficulty in parturition.

Means of ascertaining the kinds of Pelvis:—Of the means of ascertaining in the living subject, the kinds of pelvis which nature has allotted to the patient, I shall now proceed to speak; for you must be aware, Gentlemen, that it would be of little consequence to know there are varieties of pelvis, requiring a corresponding diversity of treatment, unless you can, at the bed-side, state with tolerable certainty upon which of these pelves it is your duty to operate. Independently of a very accurate *internal examination*, which is not always practicable, you may often form a very useful and probable conjecture, whether a woman have such a contraction of her pelvis as is likely to give rise to difficulty in parturition, in the following manner: when the pelvis is contracted, not unfrequently I have said this is the result of rickets in early life, or from mollities ossium; and in these cases, the other parts of the skeleton are suffering too. Now, though it does not invariably follow that where you have distortion of the arms, legs, fingers, toes, or spine, the pelvis should be contracted so as to give rise to difficulty, yet in such case, pelvic distortions are by no means improbable. Observe, therefore, the other parts of the skeleton, and you will be able to form an opinion respecting the pelvis.

Again: you will sometimes find persons distorted in a high degree about the upper part of the spine, in consequence of some *local disease* there, the pelvis notwithstanding being of the natural dimensions; you are not, therefore, hastily to infer, because there is a distortion of the upper part of the spine, the result of topical disease, that there exists a distortion of the pelvis; for very considerable spinal distortion will take place, without distortion of the pelvis. But if the person be labouring under distortion of the *lumbar vertebræ*, particularly the lower lumbar vertebræ, and more especially if she has an *unusual hollowness in the loins*, then generally contraction of the pelvis will be found to exist. A woman distorted in a high degree was brought to one of the medical schools at *Paris*, and there was, among the pupils, some whisper about the Cæsarean operation, but while they were considering the point, the child suddenly came into the world; and it is remarkable that this woman became a mother by a French *grenadier*. The woman died afterwards, and it was found that there was only a slight contraction of the pelvis. There was another female, with what is called *a hump* on the back, brought into one of the French hospitals; and this woman being asked whether she had borne any children before, replied she had six, all born alive. Therefore you must not infer generally, from a case of distortion of the spine, especially of the upper part of it, that there is a distortion of the pelvis; nevertheless, where you have this hollowness of the loins, which I now show you, contraction of the pelvis may always be *suspected*. In this pelvis you see there is but an exceedingly small space between the front and back, so that embryotomy would be necessary to delivery. The arts of *dress* would conceal, in great measure, deformities of this kind. Here indeed is a fine specimen of a spine distorted in a high degree, and the pelvis very large notwithstanding, and very little distorted.

Where you are anxious to know whether a woman has full capacity or not, there is yet a *third* inquiry to be made, and that is concerning the result of *previous* labours. If the woman has had five or six children all born dead, or all requiring the use of extracting instruments, or all sacrificed to the perforator, though the practitioner, not being your, rival may be supposed to have talent, there can be no doubt that there is a want of capacity there; on the other hand, if you learn that the children have been born alive, in whatever state the parts may be, it is quite clear there is a sufficiency of capacity, unless, which is highly improbable, subsequent contraction have occurred. So that by inquiring into previous labours, by cautiously making your observations on the spine, and by examining the skeleton generally, you may form a very probable opinion, whether the pelvis be of full capacity or not.

When women are in labour, knowing, as they do, the necessity of the operation, in general they cheerfully submit to *internal examination*; and this being the case, you, as accoucheurs, have the means of ascertaining the variety of pelves on which you may have to act. With a view of ascertaining the measures and dimensions of the pelvis, our *Gallic* neighbours have contrived an instrument sometimes called a pelvimeter, and an implement not to be altogether despised. The instrument was invented by Coutouli. It consists of *two rods*; the one slides along the other in a groove; upon the *superior rod* there is a graduated *scale of inches*, and, at the end of each rod, as you observe, it is an upright. The mode of using the instrument is twofold: you may either, where the soft parts are relaxed in a high degree, use it *internally*, or you may

apply it *externally*. When you apply it internally, placing one upright upon the *symphysis pubis*, and the other against the *promontory of the sacrum*, you may read off by the scale the distance between the two. If the parts are too rigid to admit of your using it internally, then you must lay one upright against the projection of the promontory, and the other to the pubes; and *seven or eight lines* must be deducted, as an allowance for the thickness of the soft and harder parts in front, when the difference will give you the clear space between the front and the back. By accoucheurs of some repute, there is another instrument much applauded, and this instrument, which I now show you, is nothing more than a pair of bow *compasses*, more useful, perhaps, than the other, because of very easy application. The method of using them is this: you place the one point on the symphysis pubis, the other on the spinous process of the last lumbar vertebra; then deducting *three inches*, (I think it is, but I will consult a memorandum I have,) in that manner you obtain the clear space, interposed between the sacrum and the symphysis pubis—three inches it is. This is an instrument I do not use myself, for I measure the pelvis in another way, as I shall now explain to you, but I deem it an useful one.

Besides these methods, you may also measure the pelvis *very sufficiently*, by means of the *fingers*. If you want to know the distance between the front and the back, let the fore finger be placed on the promontory of the sacrum, and the root of the finger at the arch of the pubes. To measure the brim from side to side, you may *spread out* the fingers, as I now show you. Introducing all the fingers closely together, and then spreading them from one side to the other. But a better method of measurement, I think, consists in the application of all the fingers to the *back part* of the symphysis pubis. If there be want of room behind the pubis, you will then feel something of an *angle* there. If the brim be of full measure, from side to side, when all the fingers are introduced and placed behind the symphysis, they will, as you here observe, lie all of them in the same place. If you wish to measure the *outlet* of the pelvis, the most convenient time to accomplish this is, when the child's head is there, and certainly then the inquiry becomes most important. You may easily pass your fingers round between the bones and the head, and so ascertain whether there is a sufficiency of space. If you think it worth while, however, before the head descends, you may measure the outlet of the pelvis, from front to back, first by putting the fingers in this manner, so that the root of the index lies against the arch of the pubes, and the tip of it upon the coccyx, thus ascertaining the measure between the front and the back; secondly, by laying all the four fingers into the arch of the pubes, when you ascertain the distance between the tuberosity of the ischia—in other words, the measure from side to side. However, all these I pass over, without further remark, because, in general practice, you will find them but of little importance.

When the pelvis is contracted in a slight degree only, and you have one of those difficulties arising from that contraction between the front and back, of which I have said the brim is the most frequent seat: there is another mode of ascertaining the deficiency of room, and which experience has led me to prefer before the preceding. If I were called to a woman supposed to labour under this contraction, my first inquiry would be, how many children have you had? Twelve, she might answer, if she were of the lower class of life. Were they born *alive* or not? And if she told me that all or most of them were born alive, I should thence infer that contraction of the brim was by no means probable. Now this is a question which any of you can put as well as the most accomplished professor; it is so easy and so important that it ought to be your first inquiry. On the other hand, if she were to say, all my children were born *dead*, sir; then I should suspect a contraction. If I suppose a woman has a contraction of the pelvis after making the inquiry I have mentioned, I make a careful examination with my fingers: and if a pelvis be of full size, I find myself there is no difficulty in reaching the promontory of the sacrum, though you, commencing practice, may perhaps not be able to distinguish it, because it lies so distant from the symphysis pubis, that the fingers must reach very far to find it; but if I find, which I too often do, the promontory coming forth as it were to meet the tip of the finger, so that in a manner we blunder upon it, then I know that contraction exists. To judge in this manner, however, it is necessary that you know the promontory when you feel it, a piece of intelligence this which all do not possess. I have known the promontory to be mistaken for the child's head; and I have heard of an attempt to introduce the perforator in such a case, not in the *country*, of course, for that is a land of *Goshen*, where no darkness is. (Laughter.) But to proceed: if a poor patient have a pelvis, in which contraction is suspected, I inquire in the third place, how long she has been in labour? If I find that she has been in labour *only an hour or two* after the discharge of the liquor amnii, I do not infer there is a want of room at the brim; but if she have been in labour, in very strong labour, for twelve or twenty-four hours after the discharge of the liquor amnii, the softer

parts being relaxed, and the fœtus making no progress, the probability is, that room is deficient.

Suspecting the contraction of the pelvis, in the *fourth* place, I make my examination very carefully of the state of the child's head, always to be felt. If it is not swelled, but apparently in a good condition, I have proof that it has not been injured by long pressure; and I have presumption that there is no deficiency of room: but if, on the contrary, the parietal bones are lying over each other in this manner so as to form a ridge, and if the head feel considerably swelled and soft, so as to resemble the breech, I then infer that it has been subject to much compression, and that room is wanting.

In the last place, as I wish always to ascertain this point with as much accuracy as may be, as soon as the head is fairly come down among the bones of the pelvis, I endeavour to pass the fingers between the symphysis pubis and the cranium, inferring on the one hand, that room is wanting, provided they cannot be passed up, and, on the other, that the pelvis is of full capacity at its brim and in its cavity, if the fingers can be lodged between the head and bones without difficulty; that this observation may have value, however, it is absolutely necessary that the head, as observed above, should be thoroughly within the pelvic cavity.

So then, to repeat, by passing the fingers between the bones and the head; by ascertaining what is the condition of the head, and more especially the existence or absence of an intumescence of the scalp; by learning what has been the duration of the labour under strong pains, after the discharge of the liquor amnii; by making out whether the promontory of the sacrum can be felt with facility or not; and by inquiring of the patient what has been the result of previous labours: I am enabled in most cases at the bed side to say without difficulty, whether there is such a contraction of pelvis, as demands the use of instruments. To me it matters little what is the precise measure below or above. With lines of an inch or a quarter of an inch I have little concern; all I want to know is, whether there is such a contraction above as to require the use of instruments; and by the preceding means, independently of these nicer measurements, I am enabled to ascertain it.

When we meet again, Gentlemen, we shall resume.

LECTURES

ON THE

INTELLECTUAL COMPOSITION OF MAN,

Delivered at the London Medical Society by

DR. HASLAM.

Lecture III.

On Volition.

When we contemplate the structure of the human body, when we observe the intellectual capacities that man enjoys, and likewise consider his moral nature and responsibility; it becomes evident that he was formed to act. Whoever will institute an examination of his bodily frame, will be convinced that it was constructed for motion, and possesses the necessary apparatus for active exertions. The parts principally inservient to these active operations, are termed muscles, which move the body collectively, and each member separately; and thus we are enabled to perform that variety of motions which is exhibited by different individuals of our species. A very slight inquiry will satisfy us, that all motion must have some cause, and that the movements of the human body are directed by some impelling power. The next inquiry, will of course lead us to ascertain, what are the powers that produce the motions that are displayed in the human body? When the child is born, it obviously possesses a number of distinct movements: the heart pulsates, respiration is performed, and the intestines have a species of vermicular motion, which is termed peristaltic: the lips, likewise, adapt themselves to compress the nipple of the mother, and produce that exhaustion, whereby it receives its fluid nutriment: the infant has also, occasionally, some irregular, and seemingly spasmodic movements of its limbs. If any food that has been received into the stomach, and propelled into the intestines, should excite painful gripings, the knees are drawn up to the abdomen, and it also sends forth its cries, the signals of pain or distress. A very moderate acquaintance with physiology will inform us, that two of the principal vital motions, the action of the heart and the peristaltic revolutions of the intestines, continue during life, and cannot be *directly influenced* by any endeavours we may exert to accelerate or retard them, much less to suspend their determinate motions by any act of the will. These motions have, there-

fore, been called involuntary. The term involuntary, however familiar and accredited its use, is merely the negative of those performances, which another set of moving powers may acquire, namely, by being educated to act by the influence of the will. The term affords no explanation of the functions they perform, or of the agency by which these movements are continued. While the fœtus continues in utero, its organs and members are incipiently formed by constituents, little capable of being individually discerned, or evolved from rudiments equally indistinct, and it continues progressively to augment, until a magnitude and perfection are attained that adapts it to the state of being into which it is propelled, although during utero-gestation, the ovum or fœtus is fully entitled to the character of an organised and living existence: yet it has never been pretended, that it possessed any voluntary exertions. The term therefore of involuntary, does not even notice, much less comprehend, those fabricating energies, and continuity of actions, that constitute life. Shortly after our introduction to this world there are other motions which we acquire, by degrees almost imperceptible, and which we may progressively observe, from the period of the infant's birth, until its arrival at maturity: but without tediously tracing the steps of this progression, we find that all the limbs, by constant exercise, are rendered capable of performing those motions for which their structure is adapted; and that these movements are *directed* by the individual for the attaintment of his object; and likewise by attention and repetition, that these motions, however difficult at the first attempt, become easy by practice. These are the voluntary motions, and their direction is an act of intelligence for the accomplishment of the desired purpose. The education of the muscle, in order to become stimulated by the will, is a process apparently similar, and equally gradual with the excitement to perception, by the appropriate objects that awaken the sensitive organs: and, therefore, perception will be found a principal mean by which voluntary motion is attained, and voluntary direction equally contributes to the attainment of perception, as all the sensitive organs have a muscular apparatus for their direction. It has been supposed that the performance of these motions depended on the directing and intelligent principle: but it will be found the result of a compact, or mutual agreement between the moving powers, and the intelligence that directs: the natural effect of reciprocal training. Let a painter, who is a skilful artist with his *right* hand, attempt to copy his performance with the *left*; and he will be ashamed of his picture. Let an ordinary person of mature age attempt to move the ring-finger exclusively, he will find that the little finger will move with it; but a person accustomed to play on the flute, violin, or piano-forte, will be able to exert its independent motion. This necessary education of the muscles to produce definite movements is the subject of actual demonstration, and is exemplified by the awkward manner in which the first attempts to execute all unaccustomed movements are performed.

To exemplify the total want of control in the new-born infant over its muscles, the sphincters of the anus and bladder may be selected: and it is well known, that for a considerable time after birth, the fæces and urine pass off involuntarily, and in all probability, without consciousness: indeed, those most acquainted with the management of infants, are aware of the difficulty, even under coercion and punishment, of teaching them to impose the necessary restraint, and to communicate the urgency to the nurse. Voluntary motion, is therefore not an original possession, similar to those movements that are involuntary, but an acquirement from reiterated efforts and long practice. It is the education of the body, to co-operate with our mental intentions. We admire the dexterous rapidity with which the juggler performs his tricks of legerdemain, the poise of the equilibrist,—the graceful and complicated movements of the dancer,—and the synchronous action, and perfect rest of military evolutions. These are not capable of being immediately executed, because we desire to perform them, and comprehend the nature and succession of the movements:—it requires constant exercise, under the most concentrated attention,—and for some, the devotion of years before the attainment is perfect. There is abundant wisdom displayed in constituting the movements most essential to life, independent of human volition. Had we possessed the power, without pain, of directly stopping the motion of the heart, so as to induce death: there is but little probability that any of our species would arrive at maturity, considering the passions by which we are agitated, and the miseries that surround us. Over the respiratory organs, we possess a limited control: and for many useful purposes can temporarily suspend the act of breathing, and by habit, for a few seconds, may protract the suspension:—but we are unable to continue this pause to the extent of destroying life. After our volition for the attainment of this object, has been carried to its utmost extent, there is an irresistible urgency to inspire;—which our utmost endeavours to suppress, cannot longer impede. I have known many melancholics disposed to suicide, whose hands being so secured, that it was impossible they

could effect their purpose,—have endeavoured to arrest the process of respiration:—but without success. I have likewise attended others firmly secured in the strait-waistcoat, attempt to drown themselves in a bowl or pail of water, by immersing the mouth and nostrils in the fluid;—but they have never been able to accomplish their intentions. This subject has not been sufficiently considered; nor have the voluntary and involuntary capacities of the different organs, been thoroughly investigated. The penis, for example, is a member that cannot be strictly said to be either voluntary or involuntary, implying by the latter term, that there is no established continuity of action, as in the heart, and peristaltic motion. In some states of disease, its erection is so far against the will, that it becomes highly painful, and no effort of volition can subdue the priapism: and it has never been stated that any individual can immediately, will or command the erection, without the intervention of an excitement: such as the female, or in her absence, by occupying the mind on erotic subjects, or by irritation of the organ itself, or of parts adjacent. The secretion of tears, in the adult, is ordinarily the effect of considerable mental excitement: in the child, the slightest causes occasion a pouring forth of the lachrymal fluid; and there is good reason to believe that by repeated efforts, this secretion may be rendered voluntary: perhaps the best specimens of this influence will be disvovered in the ladies: and at a mature age we acquire a degree of control over the secretion itself, and become enabled to impose a restraint on its issue. The contraction of the iris, may also be considered involuntary, as it is necessarily consequent on the excitement of the retina. Our corporeal and intellectual perfection, consists in the voluntary control we possess over the different parts of the body, and in the successful direction of our mental capacities and acquirements. Much of this superiority of attainment will depend on the *attention*, which is itself a voluntary act, and may be considered as the *duration* of the will. Thus every act of the mind, both for the acquirement and improvement of knowledge, implies that voluntary and protracted devotion to the subject, which we term attention.

Although in strictness of consideration, and speaking physiologically, we cannot in our present condition absolutely separate the corporeal and intellectual phenomena, as they are conjoined by nature, and reciprocally act on each other; yet as far as we may, for the purposes of arrangement and distiction, treat of them individually, we shall find our intellectual attainments, in their most perfect state, to be equally with the body, under the dominion of the will.

1st. Our *perceptions* may be excited by the objects appropriated to each sense, so as to be forced on the several organs. Thus a disgusting stench—an unpleasant taste—a passing meteor—the discharge of artillery or the explosion of a powder-mill—a fly settling on the face—these will suddenly attract our notice, and excite their individual perceptions, and which must be considered involuntary: but when we voluntarily devote ourselves to the examination of objects, which implies a fixed attention, the process of perception is most perfectly and efficiently conducted. We are surprised into the former, and study the latter.

2dly. That passive memory, which is merely excited by the representation of a known object, and may be regarded as involuntary, is a very inferior attainment to the active exercise of recollection, where the object or subject can be voluntarily revived: and this can only be accomplished by language, or the employment of a term as the substitute of the perception. When we enter fully on these particular subjects, it will be shown, that involuntary reasonings and reflections, are palpable absurdities, and allied to those confused assemblages, which prevail in dreams and reveries, by the subduction of the will.

We now understand that the perfection of our corporeal and mental attainments depends on the voluntary control we are able to exercise over them: it must likewise be noticed, that to move, or to abstain from motion, are equally the dictates of the will. On many occasions it is desirable that the whole body, or some particular member, should be kept still and maintained at rest: and the continuation of this stationary position, is under certain circumstances an equal difficulty, with the performance of various complicated movements. The slightest knowledge of military discipline will illustrate this with regard to the entire body; and the firm and unvarying hand which the surgeon ought to possess, equally confirms that state of the individual limb. But there are certain morbid states of the body, and of the intellectual functions, where the voluntary control in various degrees is diminished or wholly abolished. The first of these states has been termed paralysis, where all our voluntary efforts, endeavours or commands, to produce the desired motion of the particular limb, are wholly unavailing. We however retain the wish, and exert the accustomed influence to excite the movement; we make the effort to attain, in which the will consists, and are fully conscious, both of the endeavour, and of the failure of the attempt. There is a dissolution of the compact and correspondence that formerly subsisted between the will, and the muscular apparatus by which the

limb is moved. In other instances the movement is capable of being performed, but with hesitation and difficulty, on account of an irregular motion which agitates the limb (the hand, for example). This state is termed *tremor*, and implies, that the influence of the will is no longer capable of maintaining the member steady, for the due performance of the motion intended. The motion is involuntary, and the effort to attain the necessary quietude of the limb, is ineffectual; for it has been before observed, that over the involuntary motions we have no control. It seems also to be established, that when muscles, usually under the influence and direction of the will, from whatever cause, assume involuntary motions, they are thereby rendered insensible to the efforts of volition. This however is not the entire solution of the symptom denominated *tremor*,—its motion is a morbid state,—and we are acquainted with many causes that will produce it for the instant, and also permanently; but in the present defect of our knowledge I am not entitled to determine whether this tremulous motion is to be wholly attributed to a state of the nerve, or to the condition of the muscle. The former is most probable, but it is highly desirable that this question should be set at rest. The full discussion of this interesting subject in its physiological relations and moral consequences, would occupy a greater portion of our time, than can now be devoted to its investigation: but it may be concluded, that the converse of the principle on which we proceeded is likewise true:—If the perfection of our nature consist in the voluntary control over the muscular apparatus, which is acquired by assiduous training; and in the command, which the discipline of education confers on our intellectual powers: the diminution of this voluntary influence, will constitute our corporeal inferiority and mental degradation. The state of tremor may be temporarily excited by many of the passions, by which we are agitated; and at a future occasion it will be demonstrated, that the bursts and sallies of these impetuous passions, imply that want of control which by proper discipline, the will might effect: and it is well understood that a permanent tremor of the hand, and general instability of the frame, are the inevitable results of an intemperate indulgence in fermented liquors, and especially of those that have undergone the baneful process of distillation: and it is fully believed, in advanced life, that a lavish expenditure of the seminal fluid, will commonly induce the same tremescence. There are other morbid affections, where the muscles, considered voluntary, are attacked with distortions, twitchings, or snatches, and over which the will has no influence. The sensibility remains, and the endeavour to effect particular motions continues, but the voluntary intention is defeated and the limb is moved in a contrary direction. These spasmodic snatches of the muscles frequently subside during sleep: when it is presumed that the voluntary influence is withdrawn. This affection is termed chorea St. Viti, but hitherto our researches have contributed but little to the elucidation of its nature; and it is not improbable that hiccup may belong to the same class. There are likewise other morbid instances where the voluntary muscles assume involuntary actions, and become fixed or distracted with prodigious force, as in trismus, tetanus, opisthotonos, and emprosthotonos, but the rationale of these is at present equally obscure.

From the circumstances that have been already adduced, it is evident that the influence which has been termed the *will*, equally regulates a certain class of bodily movements, and those intellectual attainments that constitute mind. It has been commonly supposed, that we possess a very competent knowledge of the *vital* actions; but that the *intellectual* phenomena were removed to a distance, far beyond the ken and comprehension of our faculties. To me, it appears, that the great difficulty which impedes our physiological advancement, is the imperfect knowledge we possess concerning these *involuntary* movements, that are so intimately and secretly connected with life—the phenomena of intellect, we are enabled to trace from the cradle to the tomb;—to observe the progressive steps of its acquirement;—to investigate its constituents;—and, by a deliberate examination of our own minds, to detect the manner of its operation. When the voluntary control, which we term attention, cannot be fixed on the object of perception, its identity will not be recognised when it is presented again;—or, in other words, we shall have no recollection of the object. The memory itself, when possessed in its highest and most enviable perfection, is subject to a natural decline, and to various infirmities; and it will be found, that its principal defects are to be attributed to that want of voluntary control over this wonderful faculty, whereby the past is connected with the present, and becomes embalmed for the future. There are likewise many morbid affections by which the intellect becomes deteriorated—the principal of which, are the natural imbecility that constitutes idiotism,—the personal conceits that mark hypochondriasis,—the desponding apprehensions that are the attributes of melancholy, and the furious distractions that comprehend madness:—and these discourses are intended to be the ground-work, by which such morbid affec-

tions may be investigated and explained. The will has been considered as an original faculty of the mind, and some philosophers have assigned to it a certain degree of intelligence and discrimination :—it therefore becomes necessary to examine its nature, as narrowly as our researches can extend. The involuntary movements may, indeed, be properly designated an *original endowment*; but the voluntary motions are progressive acquirements; and the attentive observer may trace the rude and incipient efforts, until his admiration is conferred on the most difficult and complicated achievements. The progress of voluntary motion is commensurate with the improvements of perception, which are the rudiments of mind, and of those nascent desires and aversions, hopes and fears, that are the attendant spirits of intelligence ;—which gradually become matured into passions and emotions ;—and which, before the dawn of reason, and too frequently even in its perfection, constitute the motive for our actions. Without some motive to action, and ability to move, our bodies would have remained stationary and quiescent ;—and these motives imply an existing intelligence, that directs the movement for the attainment of the object. *Will*, therefore, is simply the *effort of attainment*, and by whatever motive it may be urged, impels those muscles to action, that can most readily accomplish the desideratum ;—always keeping in mind, the previous training that has rendered the muscular apparatus obedient to these acts of volition. The same explanation is equally adapted to our intellectual faculties and acquirements, whether we investigate objects by the perceptive organs, draw upon the stores of the memory, form the estimates of reason,—or direct the energies of thought to particular subjects. To invest *will*, this mere *effort of attainment*, with that intelligence which is competent to direct, would render reason altogether superfluous, and legitimise all the absurdities and evil passions, that too frequently become the motives to our actions. It may therefore be inferred, from the examination of the human mind that has been instituted, that the *will*, which by some philosophers has been reduced to the mere creature of necessity, and by others dignified with originality and freedom ;—is, in fact, a nonentity :—so little intitled to an original endowment, that it has no existence in the earliest stage of our being ;—but is an acquirement, the progressive steps of which may be traced by the attentive observer. Its advancement is commensurate with our intellectual attainments, and promoted by their contingent passions :—and its influence over the moving powers of the body and the faculties of the mind, is the effect of established convention,—the result of repeated efforts and habitual training. To employ the language of metaphor, the will is the servant that equally executes the commands of the purest motives, and perpetrates the dictates of the basest passion :—it is the effort of attainment, that becomes the holy instrument to elevate our species by the noblest actions :—the mild diffusions of charity,—the glow of friendship and the ardour of affection,—the devotion to science, the fervour of patriotism, or the struggles for liberty :—and it is likewise, as motive may prompt, the degraded tool that fabricates the works of malignity—the engine of crime—the obsequious minister to the flesh and the devil.

Having already stated the nature of the will, and exhibited its influence and operation on the body and mind, an inseparable system, and only verbally disjoined for convenience and distinction, it would be a very curious inquiry, and certainly not devoid of interest, to ascertain what would be the result to our species, if the motives we conceive or are impressed with, did *not* excite those efforts of attainment, in which the will consists. Adverting first to our corporeal frame, it will be evident that it could possess no voluntary motion, the body would therefore be stationary and inert, and our fellows being in the same condition, could render us no assistance. We should be in the state of animal trees, and be permanent fixtures, and if excruciated by pain could experience no relief. We could receive no nutriment, excepting it descended in showers, and then only by a conjectural absorption ; nor could we command the necessary activity for the work of propagation. In considering the intellectual part of our nature, we might see, by the excitation of objects through the medium of light, and hear from the intonations that assailed the auditory organ ; but we should be unable to *direct* the eye and the ear by any adaptation to discriminate : we might feebly smell the stench that issued from putrefaction, or the perfume that exhaled from the flower : the taste would be still more indistinct, as the exercise of this sense implies the voluntary motion of the lips and tongue to distinguish, and the touch would scarcely if at all exist : yet we might be sensible of heat, and feel the shivering and pain of its abstraction ; but these are mere passive sensations, and altogether different from the delicate perceptions that the touch conveys, when voluntarily devoted to such examinations. Under such privation, the lowest, or passive state of memory might exist ; but he would be incapable of making any *effort* to recollect, which is an act of volition ; and with regard to those higher powers of the intellect, which are termed reasoning and reflection, they are wholly out of the ques-

tion. With such defect of an important influence and medium of connexion, it is evident that the human race would be annihilated in a few hours; but this imaginary subject, however it might be extended for speculation and amusement, is too puerile to be further pursued. If, by assuming the converse, we were to contemplate a being wholly exempted from all involuntary endowments, which are a boon conceded to man by a superior power, and which appear, by their destined operations, to constitute life; and likewise, attribute to the same being the ultimate perfection of voluntary exercise, we should have made some progress in the definition of a deity.

Having, according to my own views, examined and defined the nature of volition, and ascertained that its influence is stimulated by motives, it is now, in order to examine of what these motives consist, that urge us to their accomplishment. To perform this effectually, would conduct to a wide field, a great part of which we have heretofore trodden.

At all the epochs of human existence, there are objects, the *possession* of which, we are persuaded will contribute to our immediate gratification or future happiness. Those among our species who have passed the middle period of life, are fully aware of the different pursuits in which they have been occupied and interested. The toys and baubles of infancy are not forgotten, we revert with delight to the gay scenes and voluptuous enjoyments of incipient manhood, and the recollection involves a regret of their too limited endurance, and the serious and more rational occupations of our riper years, are equally marked by propensities, that excite us to fulfil our wishes: all these are successively the motives that impel us to attainment, "the fair guerdon that we hope to find." According to the nature of education, which unfolds the precept, and the force of example that exhibits the model; according to natural disposition, the confirmations of habit, and the guidance of reason, these motives will be virtuous or corrupt: and the experience of those who attentively observe, will lament that the latter appear to preponderate. Such is our lust of possession,—such the seductive garb that veils the deformities of vice,—such the imbecility of our moral resistance,—and so strong the *confidence*, in the subtlety of our evasions, and crooked diplomacy, that we must cease to wonder at the motives by which we are impelled to attainment.

It now only remains to examine that question which has so much perplexed those who have devoted themselves to its investigation; and which in all probability would have been long since determined, had each party instituted the proper inquiries, by viewing it as a physiological subject, instead of straining their conclusions from metaphysical premises: this is the much disputed question of the freedom of the human will. The contest on this subject is, whether the will is free to act? Is an original and uncontrolled power, directing human actions? Or, whether the will is governed by motives, which influence and direct the action? According to the views that have been already exposed, will implies the mere effort for the execution of the movement, and which involves a conventional and established obedience. The motive or cause influencing the action, whether it be the result of a process of the purest reasoning—the determinations of capriee,—the gratification of malignant contrivance,—or the intemperate issues of immediate feeling, is an equal stimulus. During the earlier years of our existence, these motives are principally excited by curiosity, puerile interests, and the grasp of immediate possession; because at this season reason has not been sufficiently attained: and therefore the wise legislators of all civilised nations have exempted those under a certain age, from the penal responsibilities of the law. This exemption has been grounded on a fact, that the motive for the action, directing the exercise of the will, is at an early age unripe, and has not been matured by the estimates of reason: and the same principle extends to the mental imbecilities of the idiot, and to the furious sallies, or belief in delusion, that distinguishes insanity.

The ordinary education of children does not wholly consist in teaching them alphabetic characters, their composition into words and sentences, and the doctrine of numbers, but also the nature of right and wrong, good and evil,—that which is honourable, and its disgraceful opposite,—in order to fix in the mind that standard, which reason shall subsequently examine and confirm. This discipline is usually in direct opposition to the inclinations of the child, and the tutor is compelled by promises and rewards to invite compliance,—and, on many occasions, by threats and actual punishment, to enforce its adoption. Those unfortunate objects who have been taught no moral restraints, manifest the freedom of the will,—man in the most savage state of society, impelled by his appetites, his desires, and his passions, is the creature of volition:—he seizes all that is within his grasp for his immediate gratification; by stratagem from the stronger, and by rapine and open violence from the weak and unprotected. He has not been trained by civilisation and reason to regulate the impulses of desire, to suppress the indulgence of appetite, and to consider others as possessing equal rights with himself. The suicide acts from the

freedom of his will,—he is withheld by no considerations of the present, nor restrained by any hopes or apprehensions of the future. The maniac seeks the completion of his views by the readiest means, and in the pursuit of his object overturns all the barriers and impediments which the laws of God, or the authority of man, founded on reason, have interposed for security. Insanity is the purest instance of the freedom of the will, according to the ordinary acceptation of the term. But it is well understood, that to abstain from motion, and curb the impulses of desire, are equally the province of the will, and these restraints are acquirements of greater difficulty. They are both the efforts of attainment,—both constitute the motive. It is natural that the child, the savage, and the maniac, should seize the objects of gratification, and pursue the dictates of immediate feeling. But man, in his progress to maturity, begins to calculate the tendency of his actions in all their bearings and relations, and this estimate is denominated reason. On such computation, the jurisprudence of the most enlightened nations is founded, and the purest morality is erected. Thus the motives of the being enlightened by education, and trained by the maxims of philosophy and ethics, which are to be considered the institutes of reason, are motives that impel us to acts of benevolence, liberality, and friendship, and are equally free with the caprices of the child, the sanguinary wrath of the savage, or the blind fury of the madman. Yet, if a doubt should still remain, let it be painfully recollected, that the freedom of delinquency is fully established, and has too frequently disgraced the most elevated rank, and splendid talents. He who is the slave of immediate impulse, can never aspire to that dignified freedom and independence which reason dictates, and which is sanctioned by reflection.

LECTURES ON CHEMISTRY,

BY

PROFESSOR BRANDE.

Delivered at the Royal Institution of Great Britain.

Lecture III.

Gentlemen,—We are now to take a general view of *chemical attraction*, and to make you acquainted with its results.

In regard to this subject, it is easy to imagine that, as the ultimate divisions or atoms of bodies are capable, as we have seen in the preceding lecture, of combining, under certain circumstances, with each other, so as to form large aggregates or masses of matter; so, in consequence of this power of attraction being exerted upon different kinds of matter, we may, of course, expect that their union will produce a new substance, and this is called chemical affinity, or chemical attraction. And in the first place I may remark, that in no one case can we anticipate what will be the result of this action: suppose, for instance, that we mix oil of vitriol and potash together, the resulting compound will not possess intermediate properties between the two, but will be found to have acquired altogether new qualities; so that it is impossible to anticipate, in any one case, what will be result of chemical attraction, and we must have recourse, in all cases, to experiment, to determine it. It is on this principle that the most useless and unpromising bodies, through their union and combination, frequently afford substances of the greatest use in the arts; and again, that the compound bodies, which are of themselves of no importance, when submitted to decomposition, yield up their elementary parts, which are often very valuable.

To give you a common instance of chemical action, let us take some sulphur and copper filings. Now if we bring these in contact, and leave them in their dry state, no action takes place; but if you add water to the mixture, or liquify the sulphur by heat, you will find that the sulphur and copper enter into chemical combination, and that a black compound results, in which you cannot detect any of the qualities of sulphur or copper, but that you have a new substance produced; and it is a remarkable circumstance, that the body thus produced has new qualities differing entirely from its components. In the next place you will observe, that when bodies act intensely on each other, as in the present case, *heat* and *light* are often generated, or, in other words, they burn; and then, again, it must be recollected, that these substances enter into combination in given proportions only. So here we shall find, that if 16 parts of sulphur be combined with 68 of copper, the result is 84 parts of sulphurate of copper; and if you were to add a greater quantity of sulphur or copper, you would find that they would remain uncombined: showing, that when bodies unite in more than the proportion, the compound is a simple multiple of the first, the excess remaining unaltered. Mr. Brande then made the experiment of first melting a mass of sulphur exceeding the proportion before named, to which a certain

quantity of copper filings was added. Union of the bodies, attended by combustion, took place, but the excess of sulphur was sublimed. This experiment, resumed Mr. Brande, is connected with a very curious fact, which I may here briefly allude to: the copper and sulphur are, previous to their union, brought into opposite electrical states, and, at the moment of their combination, this electricity is destroyed; so that you have light and heat, and combustion, on the union of the component parts of these bodies.

In this case the two solid bodies, the sulphur and copper, entering into combination, retain the solid form, but chemical action is, in very many instances, attended with a *change of form*. Aëriform bodies are capable of producing solids, solids are capable of producing liquids,—liquids, solids,—and, in short, there is no end to the changes of form which result from chemical action. (Experiments were then made to show these facts, the first by mixing muriatic acid and ammoniacal gases; the second, by rubbing together crystals of Glauber's salt, and nitrate of ammonia; and the third phenomenon was shown, by mixing together concentrated solutions of muriate of lime, and carbonate of potash.) It is not necessary, said Mr. Brande, to multiply instances of this kind, and I only show these as proofs of *changes of form* resulting from chemical action.

In some cases, although it rarely takes place, this action is not attended by any very remarkable change of the qualities of bodies. In such cases, we generally speak of the body as being in a state of *solution*. What I mean is this: if I take a salt, and dissolve it in water, the salt enters into combination with the water, and you have a solution of the salt; so that the resulting compound differs but little in its leading characters, from its component parts. In other cases, the changes are more obvious—and, in others, exceedingly so. Here is a gaseous body contained in a jar over water, the water being of a blue or greenish blue, and you may see the gas above the water unchanged; you may observe, secondly, that it does not change the vegetable colour, and, therefore, the gas is neither acid nor alkaline. Suppose I add another portion of the same gas, the consequence is, a mere mixture of the two portions. You see that I have here doubled the volume of gas, but I have produced no change, either on the coloured water or gas. But if I now add another gas capable of changing the properties of the bodies mixed, you will then observe that they will combine chemically, and that certain remarkable changes will take place. You see the water rising very rapidly in the tube; so that you see, that the body we have now formed is, in the first place, soluble in water; 2dly. You may remark, that the vegetable blue colour is perfectly destroyed, and converted into a red colour; 3dly. The gases which were before colourless, are now become of a deep orange colour; they were tasteless before mixture, but now they have acquired an acid taste. These gases, you observe, are oxygen and nitric oxide. Changes of this kind, in the state and form of bodies, are continually going on in nature, and in the arts; indeed, the great processes of nature, such as the vegetation of trees and plants, and the phenomena of organic life generally, are connected with a series of chemical changes. We see that the inert and apparently useless matter of the soil, is converted by vegetables into new products. In the animal kingdom you observe, that the food is digested and converted into blood and other substances, exhibiting so many chemical changes, controlled by the influence of vitality; and although out of the power of art to imitate, they are still subjects of chemical investigation. You will now observe, how impossible it is to reason, *a priori*, what will be the result of chemical action; it must always be ascertained by experiment.

It is not necessary to go much more fully into the subject at present, but a few familiar instances of chemical change may be adverted to. If you combine sulphuric acid, which is a very powerful and caustic substance, with caustic potash, also a powerfully acting body, the result is a *sulphate of potash*, of which you might swallow an ounce without mischief; whereas a small quantity of either of its component parts would do great injury. The sulphuric acid, or oil of vitriol, powerful as it is, is a combination of two inert substances, sulphur and oxygen, with a little water; and you have a very caustic body resulting from the combination of inert materials, the converse, you observe, of the former case.

It may be worth while, probably, to call your attention to another result of chemical action, which is *change of colour*, because we often resort to this phenomenon for the purpose of ascertaining the nature of certain bodies. Here, for instance, is a vegetable infusion, which the addition of a drop or two of acid, you perceive, renders red, changing the green to that colour. Now if I add a small quantity of an alkali, I shall again produce a green colour, the red disappearing, and it is easy, by adding another substance, to destroy the colour entirely, namely, a solution of chlorine. We therefore use, in chemistry, vegetable blues and greens, with a view of detecting the presence of alkalies, acids, and other bodies; and we shall show you these experiments, since the knowledge of these changes bears

very much upon the arts, and indeed the whole art of calico printing and dying depends upon the knowledge of the relative action of colouring bodies. (The experiments were then shown.)

When bodies combine chemically, their *specific gravity* is altered; usually it is increased, the density of the compound being greater than that of its component parts. You see instances of this in the combination of sulphuric acid with water, or of spirits of wine with water; they suffer a diminution of bulk, and consequently an increase of specific gravity. Now here is a tube containing two fluids, water and spirits of wine, the alcohol is now uppermost, and no change takes place; but if I invert the tube, the water will pass through the spirit, because the spirit is the lighter, and the two fluids will combine, which will produce a considerable increase of density, or a diminution of bulk, the terms being of course synonymous. (The experiment was made, and the fluids, when mixed, were seen not to occupy so much space in the tube.) Why then here again is a manifest necessity of experiment in cases of this kind. Take water of a specific gravity of 200 and spirit of 100, you might suppose that the specific gravity of the mixture would be the mean of the two, namely, 150; but experiment shows you that it is greater. When oil of vitriol is mixed with water, the increase in density is much more remarkable, and the heat generated is so great that there is a risk of breaking the vessel. (Mr. Brande then directed the attention of the class to the tube in which the spirits of wine and water had been previously mixed. You perceive, said Mr. B., that a great diminution of bulk has taken place, and this will go on for thirty hours, probably; that is to say, that time will be required before the fluids will have reached their maximum of density; and we may observe here, in passing, that the ill effects attendant on the drinking of brandy and water, rather than of wine, is principally owing to the imperfect mixture of the alcohol with the water; when you drink brandy and water in this state, you drink a larger quantity of pure alcohol than if you were to wait until a more intimate combination had taken place.)

Mechanical attraction is opposed in all cases to chemical, as you might suppose. The power which holds bodies together often prevents their chemical union; and you will recollect then, in the experiment made with sulphur and copper filings, it becomes necessary to liquify the sulphur before any chemical action can be exhibited, or, in other words, to *lessen its cohesion*. Here is chlorine gas, which has a strong affinity for the metal antimony. If I put a lump of the metal into the gas, it will be acted upon superficially by the gas, but the two will not combine with any energy.—Now you observe, that if I powder the antimony and introduce it in that state into the gas, it will immediately take fire and burn with great intensity; hence pulverisation is often a necessary step to produce chemical action. The old chemists had a great notion respecting the axiom of Boerhaave, "that bodies cannot act upon each other except in a state of solution;" but the explosion of bodies, of which we have recently had such a dreadful specimen at the Post-office, is sufficient to explode such opinions. Solution does, however, favour chemical action by the minute division of the particles to be acted on. We may instance the common soda powders, composed of carbonate of soda and tartaric acid, as showing the action of solution in producing chemical change; you may mix them together, and as long as they are kept dry no change will take place, but place them in water, their ultimate particles come into contact, and they combine chemically. *Heat* is of course a power capable of diminishing the aggregation of bodies, and therefore a powerful agent in facilitating chemical action.

Having thus noticed the principal circumstances concerned in the production of chemical change, I shall now endeavour to explain a few terms which have been introduced into chemistry, in reference to attraction generally.

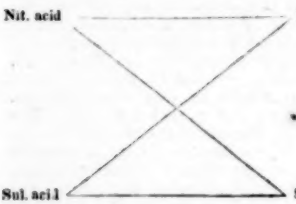
You have no doubt heard of the term *elective attraction*, a term introduced by Bergmann, and now frequently employed. If you mix together the two earths, lime and magnesia, with water, and pour a little dilute nitric acid upon the mixture, you might imagine, that inasmuch as lime and magnesia are both soluble in nitric acid, that the acid would take up equal portions of the two earths; but that is not the case: it will first dissolve the lime, then if there be an excess of acid, that excess will combine with the magnesia. This may be explained, by supposing that different bodies are possessed of different attractive powers, and we may say, in simple terms, that the nitric acid has a stronger affinity for lime than magnesia. Now if you add to such a mixture of the earths sulphuric acid, the reverse will happen. It has been customary in chemical works to give tables of elective attraction, and although they are of no great use, and are not always to be depended upon, yet they are often convenient in assisting our processes. Here is a table showing the affinities, as they are called, of sulphuric acid, for the different substances named, which are nearly in proportion to their numerical arrangement:—

Sulphuric acid.

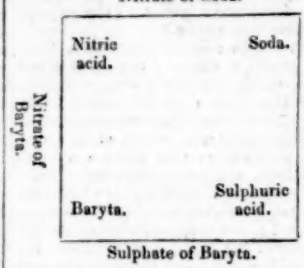
Baryta
Strontia
Potassa
Soda
Lime
Magnesia
Ammonia.

Now if you have a compound containing sulphuric acid, which you wish to decompose, the table will instruct you as to the manner of doing it. Supposing that you have a solution of sulphate of soda, the table shows that it will be decomposed by potassa, strontia, and baryta; or if you have a sulphate of ammonia, it will be decomposed by magnesia and lime. Then there is a term which has been introduced, which is *single* and *double decomposition*; a term liable to many objections, but still it remains in use. I have here a solution of *nitrate of baryta*; I add to it a little *sulphuric acid*, and the consequence will be, that the sulphuric acid will take the baryta from the nitric acid, and will fall down in the shape of an insoluble powder, leaving the nitric acid free. This is what is called single decomposition. Here, again, we will take *nitrate of baryta*, and instead of adding sulphuric acid, we will add *sulphate of soda*, a compound body: the result will be as before, a precipitation of *sulphate of baryta*, but the soda, which was before in combination with the sulphuric acid, has now united with the nitric acid, forming *nitrate of soda*; and thus you have two new compounds produced.

Dr. Cullen, whose reputation as a chemical teacher was not inferior to his fame as a physician, was in the habit of showing the affinities of bodies in the cases of double decomposition, by making a diagram of this kind, in which the substances before mixture are shown by parallel lines, and after mixture by diagonal lines.



Here is one of these tables as modified by Bergmann, in which the actions of the compounds are more accurately shown. The bodies before mixture are on the outside of the perpendicular lines; their component parts within them, and the resulting compounds on the outside of the horizontal lines:—



We might multiply instances of this kind, but these will be sufficient to show you what is meant by single and double decomposition, as well as to afford you an explanation of the uses of the tables of Cullen and Bergmann.

Now in concluding this general view of chemical attraction, we must go back to an axiom we laid down at the commencement, namely, that bodies unite only in *definite proportions*, and therefore I have to call your attention to a doctrine which has been called the *atomic theory*, which has been mixed up with a good deal of rigmarole and hypothesis, but which it will be most useful to consider as an independent collection of facts. In order that you may the better understand it, I shall mention a few examples. In the case of the experiment made in the early part of the lecture with sulphur and copper, we had occasion to remark, that a given quantity of the one united with a given quantity of the other, and it was seen that it was impossible that they could combine in any other proportions than those which were found to exist. The same thing holds good in all chemical compounds; a certain weight of one body combines with a certain weight of another; or, if these bodies be gaseous, one volume of one gas combines with a given volume of another, and it is necessary at the outset of the inquiry not to perplex the doctrine of volumes with that of weights, but to remember that they are independent of each other. Here is a tabular representation, exhibiting two volumes of hydrogen and one of oxygen.

1. Hydrogen.	7.5. Oxygen.

Now so much for volumes; but the weight of oxygen in this compound, supposing the

volumes to have been equal, to the weight of hydrogen, is as 15 to 1. But inasmuch as they combine in different volumes, and the combination just shown is that which forms *water* consisting of two volumes of hydrogen to one of oxygen, it will be seen that their combining weights will be as 1 to 7.5, or speaking in round numbers, as 1 to 8. Now if you remember the numbers of these gases, hydrogen being the lightest body known, and therefore assumed as unity or 1, and the half volume of oxygen being eight times as heavy, is therefore called 8; and if you remember that these proportions constitute water, you will have water represented by 9; which under all circumstances will contain 8 parts *by weight* of oxygen to 1 of hydrogen. If you choose to speak of *volumes*, you will remember that water is composed of two volumes of hydrogen to one of oxygen, or, in other words, of one volume of hydrogen to half a volume of oxygen, as represented in the table. We say, therefore, that 9 is equivalent or representative number of water. *Muriatic acid* is composed of one volume of chlorine 36, and one volume of hydrogen 1; because chlorine is thirty-six times heavier than hydrogen: they unite to form 37 parts by weight, of muriatic acid. The relative *weight* of hydrogen to the chlorine in the muriatic acid, although equal in *volume*, is as 1 to 36, and we therefore call the equivalent of muriatic acid 37.

If you ask why we assume hydrogen as unity, the answer is, that hydrogen is the lightest body in nature, and all compound bodies will be found to be simple multiples of its number; and it happens that all bodies in respect to it are found to be represented by *whole numbers*. For the discovery of this interesting fact we are principally indebted to Dr. Prout. In my "Manual of Chemistry," I have adopted the tabular method of representing the relative numbers of different bodies, and I believe that they will be found to be accurate. There is one circumstance which I must point out to you, which is, that when bodies unite in more than one proportion, the resulting compounds are always found to contain simple multiples of one of the first, as I stated in the commencement of the lecture. For example, lead combines with three proportions of oxygen; lead being represented by 100, combines with the proportion of oxygen represented by 8, forming the first compound; it combines again with a proportion and half of oxygen, 12; and the third compound consists of lead 100 and oxygen 16.

[Mr. Brande exhibited several tables illustrating this fact.]

When talking of the definite proportions in which bodies combine, and of their equivalent numbers, you will have observed that we have regarded the compound bodies as made up of a certain number of principles or elements, and we arrive at a knowledge of them by experiments conducted in different ways, that is, by *synthesis* and *analysis*. I have here a crystal, being a six-sided prism; I ascertain by *analysis* that it is composed of sulphuric acid and potash; and I find that by mixing together sulphuric acid and potash, and placing the mixture under suitable circumstances, I obtain a similar crystal: this is *synthesis*, and thus I arrive at a knowledge of the salt. Generally speaking, it is on these processes that chemical evidence rests. We are in the habit of calling such substances as are themselves compounded, separated from other compounds by analysis, the *proximate elements*; and such as cannot be resolved into other forms of matter, the *ultimate elements*, or simple bodies. Sulphuric acid and potash are the proximate elements of sulphate of potash; but the ultimate elements are sulphur, oxygen, and potassium.

In the next lecture I shall commence the subject of heat.

Lecture IV.

On Heat:—Its Influence as a Chemical Agent, in Art and Nature.

Gentlemen,—We are now to enter upon the subject of *Heat*; and it will be our object, at present, merely to explain the general effects of the terms usually employed in the discussion of this chemical agent: the particular facts will be afterwards pointed out.

Heat has the power of opposing aggregation, and tends to separate the particles of bodies, so much so that some mechanical philosophers have inferred that the particles of bodies are never in contact, and that there is an interstitial matter between them, not sufficient to prevent masses of matter from retaining their form, but they say that the particles are not in contact. Be this as it may, we know that the leading effect of heat is *expansion*, and that it affects all the forms of matter; so that by heat we find that this metal bar, which, as you see, now passes loosely through a hole in this plate, will become so expanded, when made red hot, that I shall not be able to introduce it. If I take another bar of the same size, and plunge it into a mixture of snow and muriate of lime, I find that a diametrically opposite effect is produced; the particles of iron are brought into much closer contact, and I can pass the bar into a much smaller aperture than before. The same holds good with respect to air. If I take a flaccid bladder, and tie the end of it, and pour hot water over it, the air within the bladder becomes so expanded, that the bladder is rendered quite

turgid, which again subsides when cold. Among the solids, metals are the more expansible, at the same degrees of temperature, than other bodies; but you will find that the different metals have different rates of expansion. It is difficult to measure with great accuracy, the degree of expansion which a metal undergoes; however, it may be done sufficiently, for ordinary purposes, by placing a metallic bar in connexion with an index attached to a graduated scale, elevating the temperature, and then ascertaining what change has been effected in its length. Here is an apparatus, invented by Mr. Smeaton, for the purpose of measuring the expansibility of the different metals; the bar of metal passes through a box, containing a liquid that may be heated up to a certain point, as water or quicksilver; the one end of the bar is fixed, and the other is opposed to an index, by which the expansibility of the metal is measured to the 10,000th part of an inch. You find that as the bar cools, it regains its former size. It may be well here to state to you, the relative expansibility of the principal metals, and taking them at 120,000, at 32° the freezing point, we shall find that heating them up to 212°, the boiling point of water, they will undergo the various degrees of expansion as set down in the table behind me. That table was as follows:—

Platinum	120,104.
Steel	120,147.
Iron	120,151.
Copper	120,204.
Brass	120,230.
Tin	120,290.
Lead	120,345.
Zinc	120,360.

Thus you see that the metals possess various expansive powers; and the instance of Bow Church, in Cheapside, may be adverted to as illustrating this property of the metals. The dangerous state of the steeple was occasioned by the expansion of the bars of iron used in the building of it. The stones were separated from each other by the expansion of the metal during the summer; extraneous matters were lodged between them; in the ensuing summer, the air having been more freely admitted, the expansion became greater, until at last the upper part of the steeple required to be removed, for the security of the surrounding inhabitants. I am informed that the same thing happened with the front of the Bank.

Now with regard to fluids, the difference of expansion under a given temperature is exceedingly great; æther expands much more readily than spirit of wine, and spirit of wine more readily than water. Now to give you some notion of the great inequality of the expansion of fluids, I may take this table, showing you that linseed oil, which at 32° we will assume to be 100,000, will, by being heated up to 100° undergo an expansion equal to 102,760; mercury would be increased only 712, whilst alcohol would afford an increase of expansion of 4,162. Now with respect to gaseous or aëriform bodies, the case is different. We have here a bladder containing air; now it matters not what kind of air is contained in the bladder for this experiment, since all gaseous bodies undergo the same rate of expansion from a similar increase of temperature. A fact of considerable importance in measuring a quantity of air. We find the steam of all vapours are liable practically to the same laws of contraction and expansion as the gases, and it has been ascertained, that if you take a 1000 parts of air at a temperature of 55° and elevate the temperature to 212°, it will become equal to 1325; this addition is making allowance for the expansion of the vessel in which the experiment was made: consequently 1000 parts of air increase 2.07 for every degree of expansion between 55° and 212°. In higher degrees of temperature the expansion becomes more uncertain; whether the expansion is so regular as that just mentioned remains to be found out. There is a circumstance with regard to fluids that I ought to have mentioned, which is that they are manifestly unequal in their expansion. If you take a bulk of spirits of wine at 37° of temperature, and add 10° of heat, you will have 47° of heat indicated; but at a higher temperature, the same quantity of heat will cause a greater expansion, and that proportionately as the liquid approaches the boiling point. That is the reason why we prefer mercurial thermometers to spirit for measuring degrees of heat, because the mercury is pretty equal in its expansion: that is to say, it is so in a greater range of temperature than spirit, because it boils at a higher degree of heat.

In consequence of this expansion of bodies by heat, you will remark one important fact connected with it, namely, that their specific gravity or density is materially affected by these changes of temperature. For instance, the specific gravity of this metallic bar will be greater at a low than at a high temperature: this fact is rendered very manifest in fluids by their undergoing a considerable increase of bulk by which of course they become specifically lighter; and again become specifically heavier as they become cold. I mention this circumstance at present because it will enable us to explain the mode of heating a vessel containing water, and also masses generally. You will find that water is a bad conductor of heat, almost a nonconductor, so that if you apply heat to the surface of it, it will be very long before the heat will penetrate the fluid; but if you

apply the heat to the bottom of the vessel you find that you can soon make the water boil, and you do this by altering its specific gravity; by establishing a current by which the cold water is brought into contact with the heated surface, until the colour is equally diffused throughout the whole. (A flask containing a coloured water was placed over a lamp to show the directions of the currents established, the heated current passing up in the centre of the vessel, and the cold currents descending on its sides. This, said Mr. B., will go on for some time, until the water begins to boil, and then you will no longer have such currents, but if the heat be continued, the water will be converted into steam.) You have seen then the change produced by heat in the specific gravity of the water by the free motion of its particles; but water is a heavy fluid, and the same thing happens in air which is a much lighter fluid, the particles of which have a much freer motion upon each other. You will understand how rapidly air may be heated, and how currents are produced and kept up in air, and if these currents could be made visible by any means, you would see the continued agitation of the air by changes of temperature. The air is a very bad conductor of heat, and therefore incapable of conveying away heat by any direct conducting power, but it becomes heated by being brought into contact with heated surfaces, and in the same way as water. You have sometimes an opportunity of seeing these currents in the air from the different refragibility of the heated and cold air; so that if you look over a slated roof in a hot day, any object in the back ground will have a tremulous appearance, and this arises from the admixture of the heated with the cool air. It is by the currents formed in the atmosphere by heat that we are enabled to warm our apartments, and if you wish to warm a room, you never think of heating the upper portion of the air. In the usual mode of warming rooms we depend upon the radiant heat of our fires for the purpose, and on the heat impinging on surrounding bodies; we often avail ourselves of this mode of conducting heat, by which heat is thrown off from bodies that may be heated, as the substance for instance of which stoves are composed. The air in contact with it is thrown off, the cold air rushes upon it, and in this way the air of a room is heated. When our object is to heat a room, radiation answers well enough; we allow the greater part of the heat to escape up the chimney, and depend upon the small quantity thrown off by radiation; but if we consulted our comfort or economy, we should adopt a different method, namely, that of ventilating the apartment by conducting heated air from stoves into it. There can be no doubt that four-fifths of the heat generated in ordinary fire places is lost to all economical purposes. In heating large houses or public buildings, the best mode is for us to depend upon currents of heated air thrown into the building from below, and allowing it to escape above; having it conveyed into the several apartments by tubes. Mr. Brande then showed a diagram of the improvements made on Mr. Stevenson's furnace for heating air, by Mr. Silvester, which he said was the best he had seen. The principal advantages of which contrivance, he said, were that a large quantity of air is admitted, that it never acquires a very high temperature, and therefore that it never has that peculiarly unpleasant smell which air that has been heated by passing through a small opening is found to acquire. With a contrivance of this kind we might throw in any quantity of air into the apartment at 70°, so as to keep the temperature regularly up to about 60°, and still have a small fire in the apartment for the purposes of ventilation. But when a great many persons are assembled it is necessary to have a good supply of air, and we should throw in first an abundant supply of moderately warm air, and then take care to have a place for carrying it away freely. If the room to be heated were thirty feet square, the cupola in the roof ought to be four feet in circumference. But now how shall we secure the exit of the warm air, and prevent the descent of the cold; the best way of accomplishing this would be to have a chamber of warm air in the roof, covered at top by a cowl, so that the opening by which the air escapes from the building should be turned from the wind. The great error into which persons fall is, that of admitting too little heated air, and of having ventilators of too small a size. I have often seen little holes bored through the ceiling for the purposes of ventilation, which would not admit of a gallon of air in a minute, especially in hospitals and poor-houses, the very places where the ventilation should be most perfect; and, I am sure, if these openings were made larger, the air in the building would be more sweet, and the inmates more comfortable and happy. This is a matter, I am sorry to say, but too little attended to; the architects of large buildings think it beneath their notice, and leave it to be afterwards arranged by the tradesmen, who know but little about it, and to do it effectually the building must be cut to pieces at a great expense and great risk of final success, whereas a little foresight would have prevented both.

I have represented that heat expands bodies, and that cold diminishes them; and that is true in all cases with the exception of water only, and that if that exception were not made, we should be often thrown into very awkward circumstances. To prove

what happens with regard to water, we shall have recourse to a few experiments. In the 17th century, the Florentine Academicians were making experiments on the thermometer, and it occurred to some of them to make a thermometer with water; they did so, and they made their experiments in a freezing mixture, and they put a mercurial thermometer also into it to show the changes that the water might undergo at certain temperatures. When they came to use water, they found, that if such a thermometer were plunged into a freezing mixture, the water began rapidly to diminish in bulk when it had cooled down to a temperature of 50°, and then it went on to diminish, until the mercurial thermometer indicated a temperature of 40°. When the water had acquired that temperature, they found, to their great surprise, that the water, instead of continuing to contract, began to expand, and that to a considerable degree, so that long before it became converted into ice, it had expanded so much, as to run out of the upper part of the tube which contained it. And, in fact, if you take a water thermometer and a spirit thermometer, and put them into a freezing mixture, you will see that the water will expand as soon as it gets down to a temperature of 40°, and that the spirit, on the other hand, will go on contracting. This may be very easily shown in an apparatus of this kind. (Mr. Brande then placed a water and spirit thermometer into a freezing mixture, when the phenomena just described were distinctly observed.) Now this fact, in itself very curious, is rendered much more important by its influence on the cooling of large masses of water. In consequence of this peculiar property, when water has attained the temperature of 40° of Fahrenheit, it is at what we call its maximum of density; it has attained then its greatest specific gravity, and if we go on cooling the water, instead of rendering it heavier, as you saw was the case with all other fluids, we render it lighter, and the rate of this expansion is equal for any number of degrees above or below this maximum of density, so that the bulk of water at 32° and 48° will be equal. Let us suppose this to represent a mass of water lodged in the earth, (showing a diagram,) which is always warmer than the air in winter; and let us imagine a cool breeze blowing over a surface of water, currents will be established in it, and it will be brought down to the temperature of 40°; as soon as this has taken place, all currents will cease on its surface, because the whole mass has then attained the same temperature, and it will begin to freeze; the cold continuing, the water becomes, on the surface, lighter, and freezes, so that you have the lighter part of the water freezing, whilst the water below retains its temperature of 40°, a temperature congenial to the habits of its inhabitants. Now, as the minute ice happens to form, an impediment is furnished to any further cooling of the mass beneath; ice is a bad conductor of heat, and interposes a barrier between the warmer water beneath, and the cold air above; so that the temperature of the water remaining at 40°, is proportionably warmer than the air, as its temperature may fall below 33°. You are enabled, therefore, to get an abundant supply of water in the most severe winter, merely by breaking through the ice. Now, see what would be the consequence, if water did not expand previous to its conversion into ice, the whole mass would be cooled down to 32°, and we should be deprived of our supply of water in the winter season, and all the inhabitants of that fluid would be killed.

There is a considerable expansion of a fluid during its crystallisation, but that does not form any real exception to the rule I have laid down, since that fact depends upon the new arrangement of the particles of the matter so combining; and, it is curious, that the crystals form with such violence, as to break through great mechanical resistance; leaden pipes are often, in this manner, torn asunder, showing that the force with which water expands when freezing, must be very considerable; it has been supposed to be equal to several tons pressure, during the formation of the crystals. This expansion of water in freezing, has a very important effect in nature; for the water having insinuated itself into the crevices of the soil, or even of the rocks, becomes then frozen, and by the expansion attendant on that process separates the soil, detaches large masses of matter from each other, disintegrates them, and fits the soil for the purposes of vegetation.

In the next lecture we shall proceed to examine the thermometer, and endeavour to ascertain how far it is really a measure of heat.

FOREIGN DEPARTMENT.

ROYAL ACADEMY OF MEDICINE.

Section of Surgery.—Sitting of 16th August.

FRACTURES OF THE NECK OF THE FEMUR.*

M. Larrey made a report on a paper of M. Brulatour, Director of the School of Medicine at Bourdeaux, in which there was

* Archives Générales de Médecine.—Septembre, 1827.

an account of eight cases of fracture of the cervix femoris. Sir Astley Cooper asserts, that bony union seldom or ever takes place when the fracture is situated within the capsule. M. Brulatour's cases tend to refute Sir A. Cooper's assertion; in six, permanent extension was kept up by Desault's apparatus, and a cure was promptly effected, so that at the end of three months the patients walked without lameness and without the aid of crutches or sticks, and the fractured limb was only shortened a few lines. In the seventh case, the patient died thirty days after the fracture from pneumonia; the body was opened, and the fracture presented the appearance of a red line containing a cartilaginous substance, which joined the two fragments of bone, and all the fibrous structures of the part were tumefied and in a state of inflammation. Lastly, in the eighth, the patient recovered from the effects of the fracture; but his death, which happened ten months afterwards from spitting of blood, gave M. Brulatour the opportunity of examining the seat of the fracture. Its situation was visible; it had divided obliquely the centre of the neck of the femur, which was much shorter and thicker than that of its fellow; when sawed in its whole length, the callus presented the form of an oblique reddish line, of a darker colour, and softer substance than the rest of the bone; the specimen was then presented to the meeting. M. Larrey thought that this specimen unquestionably proves that fractures of the neck of the femur may, notwithstanding what has been said, unite as completely as those of any other bones: if its union is so seldom obtained, it is because the limb is not carefully kept immoveable, and because the apparatuses for permanent extension, which are generally employed, are more fit to separate the two fractured fragments of bone than to keep them in contact. From fifteen to twenty days of perfect rest, and the horizontal position, are sufficient, as a specimen which M. Larrey presented proves, to effect this union. Sabatier, in these cases, only employs cylindrical splints, on which he places the fractured limb, recommending repose, and leaving the rest to nature.

This report brought on a discussion; several members, MM. Baffos and Murat, thought that the greater part of M. Brulatour's cases had no character of fractures of the neck of the femur, nothing being more rare and difficult to obtain than union of these fractures without shortening of the limb, and consequently without lameness. M. Murat, after examining the specimen presented by M. Larrey, added, that it was a specimen, not of fracture of the neck of the femur, but only of contusion of the neck.

FRACTURE OF THE HUMERUS BY THE ACTION OF MUSCLES.

M. Larrey read another report on a case of fracture of the head of the humerus, which was produced by muscular action. The case was that of a young soldier, who, in a quarrel with one of his comrades, endeavoured to throw his opponent's wrist back, and thus fractured his own arm. The reporter thought this case was worthy of publication, on account of its rare occurrence. Fractures of the humerus, by muscular action only, are very seldom seen; he had once the opportunity of seeing the neck of this bone fractured from a similar cause, in a lady who, when descending from a carriage, felt the step give way, and holding firmly by one of the handles of the carriage, fractured her humerus immediately above the insertion of the deltoid.

ST. VITUS'S DANCE.

M. Lisfranc presented to the meeting a lady whom he had cured of this disease by general bleedings, and repeated application of leeches to the upper part of the spine: he had been induced to try this mode of treatment, because M. Serres had assured him that he almost always found the tubercula quadrigemina in a state of inflammation in the bodies of those persons who died of chorea. M. Serres, who was present, stated that in four cases of chorea he found the tubercula quadrigemina altered; in one case a fatty tumour was developed on them; in another, there were marks of considerable excitement, with bloody effusion at the base of these bodies. In the two last cases, the whole substance of the corpora quadrigemina was inflamed, and the inflammation extended to the roof of the fourth ventricle. The symptoms appeared to him to have some relation with an injury of this part of the brain. M. Serres tried experiments on living animals, and found that those animals in which this part of the brain was injured, had motions similar to those observed in cases of chorea. M. Rolando had also perceived this fact in his experiments. M. Serres was not, however, willing to conclude that in every case of chorea the tubercula quadrigemina are injured; he had seen several in which no injury in the brain could be discovered. As persons afflicted with this disease generally experience great pain at the back part of the head, above the region of the neck, he had been induced to apply remedies to this spot, and which had often cured the complaint in its acute state; but, when it becomes chronic, the frequent application of leeches, in the neighbourhood of the supposed seat of the disease, prove of no benefit.

ROYAL ACADEMY OF MEDICINE.

Sitting of the 21st of August.

SPOTS OF BLOOD.

M. Orfila stated that since he had read to the meeting a paper on the means of recognising spots of blood on clothes, &c., it had been published, on M. Dulong's authority, that the globules of blood, which constitute these spots, may be discovered by the aid of a microscope, and even the form of the globules be distinguished, if the spots are formed of human blood, or of the blood of animals. M. Dulong said, that this mode of investigation had been successfully used, and that the great advantage was its being applicable to the examination of very small quantities. M. Orfila wished to be assured of the truth of these assertions, and had therefore made experiments on spots of human blood, and the blood of pigeons; these spots, some of which were old, others fresh, were placed on glass, and examined by means of a microscope, both in a dry and liquid state. The result was, that far from perceiving any difference in the blood, M. Orfila could not distinguish with certainty whether it was really blood or not.

OF THE PROTO-NITRATE OF MERCURY USED AS A MEDICINE.

Dr. Sundelin, of Berlin, has called the attention of medical men to a preparation of mercury little known, from which he has derived great advantages in syphilitic and some other affections. Dr. Sundelin, considering the inconveniences attending the use of the deuto-nitrate of mercury, owing to the caustic form of the deutoxyde, prepares a nitrate of mercury in the following manner; it only contains the protoxyde:—*Take of pure metallic mercury, pure nitric acid, simple distilled water, of each one ounce; let them be placed in a cold place in an uncovered glass vessel, until crystals be formed; wash the crystals in distilled water, and keep them in a glass vessel well covered.* Dr. Sat first gives $\frac{1}{12}$ $\frac{1}{8}$ of a grain of this salt, and increases the dose, according to circumstances to a grain twice a day; he prefers it in the form of pills:—*Take six grains of the crystallised nitro-oxyde of mercury, dissolve them in a little water, add to the distilled solution, liquorice powder and mallow root, of each one drachm: let the mass be made into 90 pills.* Give at first two pills every day, and gradually increase them to sixteen. The intestinal canal bears this form much better than the sublimate, and it may be conveniently given to very irritable patients. It takes, however, a great length of time to produce salivation. It favours the secretion of the urine much more than that from the skin. It is very beneficial in secondary ulcers of the palate, exanthematous eruptions, and ulcerations of the skin produced by syphilis, diseases of the periosteum and the bones. The treatment must be accompanied by a spare diet, warm baths, mild temperature, and the use of the decoction of sarsaparilla.

PLACENTA DETACHED BY MEANS OF AN INJECTION OF WATER INTO THE UMBILICAL CHORD.—BY DR. TARONI.*

Dr. Taroni was called to a woman half an hour after delivery, and found the placenta still in the uterus, and a copious hæmorrhage from the womb. He tried in vain to extract the placenta by traction on the umbilical chord, accompanied with friction and cold applications on the abdomen. Two hours had elapsed, and the bleeding still continuing, he recollected the means advised by Dr. Mojon, and injected with some force, spring water into the umbilical vein (proposing to add vinegar if water was not sufficient); he then tied the umbilical chord to prevent the return of the injected liquid. At the end of two minutes the uterus began to contract, and the placenta was freely and easily withdrawn, when all went on well.

OF THE EFFICACY OF TANNIN IN BLEEDING OF THE WOMB.—BY DR. PORTA.

The following are the results of this physician's investigations on the use of this remedy:—1st. The tannin acts in a particular manner on the uterus, when this organ is the seat of an irritation, which causes great bleeding from the womb, and when this discharge results from a chronic inflammation of the womb. 2d, In bleeding from the womb, owing to acute inflammation of this organ, it is necessary at first to subdue the inflammation by frequent evacuations of blood, and again to have recourse to the administration of the tannin. 3d, This medicine is of no good in hæmorrhages of the uterus, which are the result of an organic alteration of this organ. Lastly, this medicine is deserving of preference over every other in the treatment of hæmorrhage from the womb, not only on account of the celerity with which it stops the bleeding, but also because it is efficacious in so small a dose, that the stomach can bear it when in the most irritable condition.

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* Revue Medicale. Septembre, 1827.

SKETCHES

OF THE

SURGICAL PROFESSION IN IRELAND.

No. XXI.

MR. HARRISON.

The Royal College of Surgeons in Ireland, during the year which is about to loose itself in the great cycle of eternity, has simultaneously undergone a moral and physical revolution. No less than three new names have been added, in that short period, to the catalogue of its professors; while the structure itself has expanded, as if for the reception of this important addition to its former members, into twice its original dimensions, with an incalculable increment to its beauty and accommodation. Among these alterations the succession of Mr. Macnamara (with whose merits I may one day or other make the public acquainted,) to Mr. Hewson, in the chair of surgical pharmacy, and the conversion of that anomalous fraction of the duties of the chemist and naturalist into a full course of materia medica, have turned out obvious improvements. Mr. Macnamara being attended during the last season by a numerous class, a novelty in that department of education in the college, and the certain criterion of the utility of the science, and the efficacy of the teacher. By the unanimous consent of the college, Mr. Jacob, whose portrait already adorns the pages of The Lancet, has been transferred from Park Street to Stephen's Green; and Mr. Harrison, the more immediate object of consideration, has at length, in conjunction with him, obtained the long-sought consummation of his hopes, a professorship of anatomy. Mr. Colles and Mr. Wilmot confine themselves in future to surgery, and much is, and may be reasonably, expected from their exclusive attention to a branch of the art in which both excel These movements of our surgical establishment are so far progressive with the improvements of the age; and as such are the indisputable objects of approbation, more particularly at an era when its elder contemporaries behold its rapid advances, immoveable as the index of the dial which only marks, without participating in, the motions of time. Constituted as it is at present, and with all its energies brought into full operation, it would present the most comprehensive and efficient school of professional instruction in this, I might indeed say in these, countries; and with the addition of a national hospital, there is no reason why it should not demand, and why the power should not be granted, of conferring medical as well as surgical degrees, since they will not be conceded by the legitimate source.

Various circumstances conspired to effectuate these innovations. A considerable sum having accumulated in the college treasury, (which the popular constitution of the body fortunately preserved from private embezzlement,) it was judiciously decreed to the enlargement of the plan, and the correction of the defects in the architecture, of the original building. The appropriation of such a public fund to such a national end, is at least indicative of the healthy state of the fiscal arrangements and liberal spirit of the institution; and deserves a passing tribute of approbation, as an honourable exception to the usage of other corporate exchequers, whose incomes, flowing in a full stream, are visible for awhile, but suddenly disappear by a secret absorption, like certain rivers which at once vanish from the traveller's sight in the sands of the desert. To no other purpose could property collected in the name of science be more properly devoted than to the decoration of its shrines, and increasing the facilities of its cultivation. Stone has been the universal medium on which the moral spirit of all civilised ages has impressed the image of its own majesty, and sought, by such lasting records, to perpetuate those feelings in which they originated. The progress of every country to improvement has ever been associated with public works; and the gradual rise of the arts may be traced on the map of history by the number and splendour of the temples dedicated to their cultivation. From engraving moral sentences on tablets along the highways of Attica for the instruction of its inhabitants, Athens, in a more prosperous hour and munificent spirit, taught the classic portico to rise amid the gardens of the academy, for the reception of her literature and philosophers; and until the temple of Apollo rose at the command of Rome, she had but few sons worthy of occupying its niches with their busts or productions. Such monuments, next to the creations of the mind, are the best testimonies of a nation's devotion to science, while they supply inexhaustible fuel for its lamp; for, there are few so indifferent even to external objects, as to look on the accumulated labours of the human mind in the recesses of a library, or to behold the records of industry collected in a museum, without sympathising with the spirit of the scene, and feeling some twitches of emulative emotion. For the excitement and indulgence of such aspirations such structures ever have been erected, a truth which cannot be too forcibly impressed on the founders of that which has called for this tribute to their exertions; for if it be intend-

ed only as a more magnificent sepulchre of the labours of the illustrious dead, accessible on state days through the key of some official verger, instead of being a memorial of their wisdom, the pyramids of Egypt are not a more obvious evidence of the vanity and folly of its kings, than will be this pile, a monument of the unmeaning prodigality of its possessors.

The spirit of improvement, which directed the expenditure of the funds in the manner described, also suggested, or rather approved, the proposition of the education committee for the appointment of two additional professors of anatomy and physiology. It was observed that the number of private schools lately called into existence, by the increasing reputation of Dublin, as a place of professional study, and the talents displayed by many of their proprietors, threatened to thin the benches of the theatres in Stephen's Green. It was, besides, perceived that the years and avocations of Mr. Colles, and his colleague, incapacitated them in some measure for the performance of the duties of the anatomical chair. Mr. Colles, indeed, seemed rather inclined to favour than to discourage the rumour of his anatomical infirmities; and, like those monarchs, whose early fame supports them in the inactivity of age, appeared, for some time back, more solicitous about establishing the succession in his own family, than in forwarding the interests of the commonwealth. The report favouring the accomplishment of his design, he embraced the opportunity of effecting his object; but though well prepared for the enterprise, he found it somewhat more difficult in the execution than he expected. A fact, thundered on the public ear by the twelve thousand peals of THE LANCET, cannot long remain a secret, or fail of making an impression; and it was consequently well known, through this awful medium of publicity, that Mr. Colles long entertained the paternal notion of making Mr. Harrison a *locum tenens* during the professional minority of his own son, who, I believe, is not yet released from the bondage of an apprenticeship. The influence of public discussion, if not triumphant, was at least sufficiently felt to throw the college into an attitude of opposition against the incumbrance of a dynasty; and if the system of election had been of a more popular form, and a candidate of even equal qualifications with Mr. Harrison had appeared, the result of a contest would have been far different. Mr. Ellis, however, a young gentleman of great scientific attainments, was the only individual, except a Mr. Hargrave, who presented himself on the occasion. Having received a "circular" intimation of the approaching election, and relying on the specious forms observed, and the oaths taken, by the electors, he offered himself as a candidate, quite unprepared by any of those mystic ceremonies of sycophancy, politely designated a "canvass." Though he swallowed the bait, he suspected the hook; but instead of replying, as he did, to the electors, by stating that the testimonials and representations of candidates were no tests of their competency, and that he was willing to submit to the *experimentum crucis* of an examination, as the only means of settling the question, he should have protested against being a party, even by implication, in the proceedings of a tribunal unfairly constituted. He should have known better than to sanction the measures of the court, even by a conditional acknowledgment of its right of decision; or to give the semblance of a fair competition to an election unjust in principle, and in effect long since determined at Mr. Colles's fire-side. But the result of the experiment may teach him and others, that half measures, without serving those who adopt them, only provoke further aggressions on the birthright of talent; and that compromising with a violation of principle, is, in general, as useless to the stipulator, as the faithless charm of the magician to the mariner against the storms of the eastern seas.

While the usual forms of election were preserved on the hustings, Mr. Colles had already the command of the poll-book behind the scenes; and to all who had the slightest insight into the dispensation of place, and the talents of the successful candidate for its attainment, the event of the contest could not be doubtful, for Mr. Harrison, to his high professional qualifications, unites the useful accomplishments of the man of the world in an eminent degree. He is one of those elastic, persevering votaries of fortune, whom no coolness or procrastination of the goddess can repulse from her worship. Let her fly him, or frown upon him, his sprightly physiognomy neither evinces a shade of despondency, nor his devotion one moment's intermission. Just at a time when she seems least inclined to favour his proposals, his constitutional buoyancy of spirit flows over in an effervescence of hilarity; his gay countenance brightens into a more coaxing smirk; his pace quickens into a more lively jauntiness of movement; his eloquence ripples in a more playful and brisker current, until she sinks into his arms, overcome by the patience of his suit and the obstinacy of his caresses. The assiduity with which he pursues his object knows no relaxation, or his measures to secure it any other bounds than the limits of his invention, which happens to be fertile in diplomatic resources. He glances through futurity, comprehends the contingencies of an event, still slumbering unseen by others in the womb of time, with the ra-

pidity of his own twinkling eye, while his pliability of character bending to circumstances which it cannot resist, meets opposition at all points, and disarms it of half its hostility. His sagacity in these respects is the more admirable and effective, from being concealed from public view by a mannerism bordering on levity, and a complaisance approaching servility. A frankness of address conceals all appearance of artifice, and no pupil bowed into admiration, or spell-bound by the accents of condescension, could ever suppose that these manifestations of personal attention, led to the vulgar profits of a private dissection in a public school, or to an evening *grind* in the study at Stephen's Green. These talents, which have so powerfully aided his progress in life, seem to have developed themselves at an early period, and to complete their versatility, to have even assumed a sentimental cast; for love, that spring-board of promotion, was the salient point from which he bounded into a professor's chair. I believe it is by no means uncommon with pupils of a handsome person and aspiring turn of mind, such as Mr. Harrison must have been in the days of his indentures, to divide their thoughts between their master's library and his drawing room—to relieve the monotonous pursuits of pathology, by indulging in the agreeable reverie of securing professional patronage by a matrimonial alliance. The practice and its advantages did not escape the ken of the future professor, for during his apprenticeship to Mr. Colles, his suavity of manner and good-humoured features laid the foundation of his success in the affections of that gentleman's sister, who was pleased to lead him by the royal road of marriage to immediate notoriety. His qualifications for teaching were instantaneously discovered by the light of the nuptial torch, and as soon brought into operation by an appointment in the dissecting rooms of the College. In the capacity of demonstrator, he has continued for a series of years to the present crisis in his affairs, when, after a long course of coquetting with his hopes, the College have terminated their pets much in the manner of Julia with Don Juan:—

"A little still she strove, and much repented,
And whispering, 'I will ne'er consent'—consented."

His numerous friends, I have no doubt, will be grateful for having those professional excellencies pointed out, which, like those useful talents already described, his modesty may have concealed from their indiscriminate admiration; for Mr. Harrison has had not only the good fortune of winning much personal esteem, but also of being considered a man of genius, and one of our best educated surgeons. If the possession of the highest credentials which colleges and universities can bestow be a proof of learning, he must certainly be a profound classical and medical scholar, being, I believe, a graduate in arts and a doctor of medicine of Trinity College; but of these advantages he has as yet evinced none of the usual signs, having left his admirers as destitute of evidence to maintain their meritorious faith in his transcendent perfections, as the prophet of Mecca left his followers of miracles to support their belief in his divine mission. Talent is but another name for the power of production, and the inductive philosophy of modern times teaches us to rest satisfied about the absence of a cause where an effect cannot be discovered. It is certainly drawing too freely on the kindness of his friends to afford them negative proofs only of his merits; and ungrateful to leave them but the poor consolation of quoting from Gray,

"Some mute inglorious Milton here may rest,"

if it should so please Providence to remove him in the present stage of his career. He is now connected for a length of time with a situation which daily reminded him of exertion, and supplied the means of professional literature; but we are still thrown on the pleasing though perhaps futile alternative of looking forward to futurity for that fruit which has yet scarcely put forth a blossom. During a long period of probation we do not find his name among composers, compilers, essayists, or any other of the thousand appellations of literary operations, which mark the march of mind in this most wonderful of all ages. One small work indeed rejoices in his name, but its tiny form would be alike endangered by the weight of censure or of panggyric. Viewed even through the lens of partiality, it is impossible to magnify the act of reducing into a legible form, discourses which had been spoken on one branch of anatomy daily for many years, into a solid basis of professional reputation. Even this diamond edition of the dissecting room, was not hazarded before the public until cut and polished by the critical hands of the late Mr. Todd; or without an invidious attack on the labours of his colleague, Mr. Shekelton, one of the most industrious and promising cultivators of natural science whom Dublin ever saw. If we turn from the medical literature of the day to search for records of his taste and dexterity in the museum, we shall find as few monuments of the industry of his scalpel as of his pen; there being, I believe, scarcely a single preparation in that quarter of the College produced by his labour, or impressed with his name. It is possible Mr. Harrison might have performed all he has omitted, and that

reasoning on his latent capabilities from negative data, is like attempting an analysis while the crucible is empty. Once, however, and only once, I had the pleasure of hearing him put forth his strength in a studied discourse, in which it was expected his learning would be equalled only by his oratorical powers, for which, as a descriptive anatomist, he is so justly celebrated. It was on the death of Mr. Todd. The course of lectures then in progress being interrupted by that melancholy event, Mr. Harrison was called on to complete them; the occasion naturally suggested a panegyric on the deceased, and it was consequently expected that the orator would prove himself worthy of succession by the talents displayed in the apotheosis of his friend and predecessor. The audience was certainly predisposed to indulge in emotions of sorrow, the event which called them together being still fresh on the public mind, and at all times indeed there is a strong sympathy between Pat's tympanum and his tears. Presuming on his sensibility, the Pericles of the dissecting room plunged at once into the depth of elegiac passion: epithet followed epithet; figure entwined with figure; virtue pressed on virtue; talent expanded into genius, until the immortal spirit of the deceased, decked with a rhetorical garland of all the perfections of humanity, was, by one commanding flourish of the pencil, dashed on the canvass in the act of creating the Royal College of Surgeons, and breathing infallibility into every part of its infant frame. Whether it is that the human heart is so capricious an organ, requiring such a peculiar delicacy of tact to elicit its finer tones, or that the unskilfulness of the minstrel, the antidote which his features, exhilirating grief itself like one of those cherubs that smile through the grim trappings of the hearse, supplied against melancholy, or that some inconcealable defect in his subject for eulogy prevented the signs of premeditated woe, it is certain that the conclusion of the climax excited an untimely titter through the benches, one or two laughing outright; and it is said that Sir Peter Courtenay, then engaged in the Museum, saw the bust of Dense tremble on its pedestal at the moment of the awful annunciation which transferred the glory of his labours to Mr. Todd. For the accuracy of this rumour I cannot vouch, Sir Peter being sometimes subject to superstitious indulgencies of the spirit, might, in one of his gloomy anticipations of being assassinated by the hands of a papist, have conceived, in the awe-inspiring presence of bottled monsters and ghastly skeletons, that the marble of the Popish lithotomist and founder of the college was actually rising in arms against his life. I cannot say, however, that I experienced on the occasion any of those thrills of feeling which true eloquence will sometimes produce; or discovered in the texture of his discourse any of those classical spangles with which learning supplies genius to ornament its woof. It is not, however, to be inferred, because he may not have pleased the perhaps whimsical taste and extravagant expectations of the writer, that he is not liberally educated in the ordinary acceptation of the phrase, an useful teacher of his profession, and highly endowed with the faculty of conveying his ideas on familiar topics, for nothing could be more incorrect, or more foreign to my views, than to lead my readers to any such conclusion. In medicine as in heaven there are "many dwellings," and Mr. Harrison may take up his abode in the dissecting-room as the best demonstrator in Dublin, and as far as I can collect from the most intelligent of the English and Scotch students here, perhaps in Great Britain. Whatever of anatomy is known, he unfolds to his pupils in the most minute and comprehensive manner, being, on anatomical subjects, perfectly at home; and if there be any fault in this respect it arises from a redundancy of description and a rapidity of utterance, errors which can only spring from a thorough knowledge of his duties and a perfect command over the vocabulary of technical expression.

It is not, therefore, on the grounds of any incompetency to discharge the duties for which he has been chosen, or on the supposition, that the electors did not act conscientiously in appointing him, that any objection can be made to his elevation to a professor's chair, for the court could not have selected a more efficient teacher of anatomy; but, for the obvious reasons, that a mere teacher of anatomy was not the person wanted to advance the interests of the College, that family influence had been used to secure his election, and that the system of election itself is grossly erroneous in principle. Of mere practical anatomists and anatomical stuff of every description, we have more than a superfluity. Our proverbial wealth, in this species of chattel, has long enjoyed much the same kind of vague and useless celebrity, as the mountains of Peru for their unwrought ores. Our resurrection men, the most accomplished certainly of that much-abused race, have, I believe, done as much for our fame as all our surgeons together, and Bully's Acre diffused our scientific reputation as widely among the civilised nations, as our Dublin hospital reports. By professional literature alone, we can be rescued from this poverty of authorism in the midst of abundance of intellectual materials; and it is, consequently, with some qualms of patriotic displeasure, that we see a man, not

likely to remove this imputation, raised to an office which should be filled by one whose master mind, operating on our unworked treasures, would impress them with his own image, and by their diffusion bring our name into more general circulation. With still less of passive endurance can we see places, which should be filled by such men, disposed of by a system of family influence, which, if not checked in its spreading progress, threatens to exclude talent from its right, and, in its stead, to make

"Dunce the second, rule like dunce the first."

For one, I cannot agree with Mr. Abernethy's latest theory, of breeding professors; or, of even procuring by the force of art, those qualities in a teacher which can be the fortuitous gifts of nature alone. The project, indeed, may succeed among cattle and kings—among "South Downs" and "Bourbons"—whose virtues are always hereditary; but that the best anatomical sire, though ever so perfect in all his points, can transmit his own excellencies to his progeny, "guid faith, he mauna fa that." But, as long as our present mode of election continues in operation, there is too much reason to fear that expostulation is vain, and that it will only prove the cradle of a long line of "infant anatomists." Under such a system, college, like custom-house oaths, will soon become proverbial for their violation, and a pass word of deception. But admitting even that these electors conscientiously discharge their obligations, how is it possible that they can return a fair verdict, without an examination of the parties? What man, on his oath, can affirm which of two, three, or half a dozen of candidates, of whose competency to teach he knows nothing more than from public report, or personal representation, is the most talented, or possesses the most extensive information? Impossible in effect, and blasphemous in principle, such a system arrogates the omniscience of heaven, by pretending to a knowledge of the secrets of the human mind without the human labour of scrutiny, and necessarily involves its supporters in the foul crime of perjury by presumption.

ERINENSIS.

Dublin, Oct. 1827.

MEDICAL CLINICAL INSTRUCTION AT ST. THOMAS'S HOSPITAL.

CLINICAL LECTURE ON AGUE, BY DR. ELLIOTSON.

THE duty of delivering medical clinical lectures at this hospital, it seems, but we know not why, has entirely devolved on Dr. Elliotson. We have no doubt, that as far as Dr. Elliotson's individual exertions can go, the subject will receive justice at his hands; his zeal and assiduity in communicating every possible information to the student, are well known and appreciated. But it must be remembered that, as *only one third* of the medical cases in the hospital are placed under the care of Dr. Elliotson, the clinical information to be derived from the remaining two thirds, under the care of his colleagues, Dr. Williams and Dr. Scott, is lost to the pupils. The sum of eleven guineas is paid by the student for six months "*medical practice*" at St. Thomas's Hospital, to which three physicians are attached; and we presume that this money is paid for the purpose of seeing and obtaining clinical instruction from *all* the medical cases. But how stands the fact? Why thus; owing to the supineness and apathy of two of the physicians, *only one third* of the medical practice of the hospital is rendered available to the student. And yet, we dare say, that Dr. Williams and Dr. Scott feel no remorse—no compunctuous visitings at pocketing their respective shares of the fees. Upwards of twenty pupils have entered to the medical practice this season, and substracting the customary *douceur* to the apothecary from the sums paid by these students, about one hundred and forty guineas have been received by Dr. Williams and Dr. Scott for doing nothing. It is true that these gentlemen, *as a matter of public duty*, visit their patients twice a week, *at irregular hours*; it is also true, that the one enters his cases, for his own information, in the following lucid style, "dolor lateris, dolor capitis, ægrotat menses tres," &c.; whilst the other makes use of short-hand characters, intelligible only to himself; but neither offers any instruction to the pupil, whose money they have shared, under the implied pledge of instructing.

The following clinical observations were delivered by Dr. Elliotson, on Saturday last, to a numerous class.

Gentlemen,—I regret that illness has prevented me from commencing the course of clinical lectures on the first Saturday of the month, as advertised, also from being present when my patients were last admitted; this latter circumstance, together with my not having treated any of the patients myself more than a week, will prevent me from giving a lecture to-day on any particular case. However, I will take the subject of ague, and illustrate its history, causes, and cure, from the whole set of patients at present under my care in the house, affected with this disease. But, previously to doing so, I will offer a few remarks on clinical instruction. Gentlemen,

clinical instruction is to learning the practice of medicine, what dissection is to learning anatomy, indispensable in deriving utility from lectures. It appears to me that there are five modes of clinical instruction: first, the mere witnessing of the physician's visit, and observing the remedies employed; this, I am sorry to say, is a plan too generally followed in the hospitals of this country, but I scarcely need say it is a very bad plan: secondly, in addition to the *silent* visiting and prescribing, the giving of an occasional lecture, on a particular case, is adopted by some; this is a somewhat better plan than the first, but altogether insufficient: thirdly, the delivery of remarks and reasons at the bedside of the patient, with more minute and copious information in occasional lectures; this is indeed an excellent plan: fourthly, the system, which is particularly practised in some schools abroad, where a minute history of the case is taken by certain pupils, the diagnosis prognosis, and suggestion of treatment, also written by the pupils, and these examined and corrected by the attendant physician; this mode of clinical instruction is good, but there is a chance of too great minuteness and overburthening of the case with unnecessary particulars; at any rate it requires more time than the students of this country can give, where there is so much to do in a very limited period. It is grievous to reflect upon the loss of valuable time in apprenticeships, which should be spent in learning the adjunct sciences; for if seven years are to be spent in learning the medical profession, the division of time should be just reversed—it should be, two years apprenticeship, and five years study in London. The fifth mode of clinical instruction is, where, in addition to bed-side information and lectures, the pupils are intrusted with the care of patients: however, this plan is entirely out of question in these establishments. It is my intention to adopt the third mode which I have mentioned; and I think if this system be fully acted upon, it is a very efficient plan for the *practical* teaching of medicine. I delivered clinical lectures the year before last, when this school was first established, but declined last year, *because my colleagues would not join me*; at their particular request, however, I have again consented to do it alone. Thus much of clinical instruction; now with respect to

AGUE.

There are eleven cases of ague at present in the Hospital; seven males and four females. (Here the names of the wards, and number of each patient's bed were specified.) You will here observe the greater frequency of this disease in males; in the three last years, I had forty-two cases of ague under my care, and only three of these were females. In the course of eleven years Sir Gilbert Blane had, in this hospital, 192 cases of ague, and thirty-three only were females. This circumstance is attributable to males being more exposed to the causes of ague, than females. In these cases you will remark all the different symptoms and stages—the cold, hot, and sweating fits; the different *types* of intermittents, too, will be well seen. Seven were quotidian, and four tertian; one was a quartan, and then became a tertian afterwards; the quartan type is always most rare. There are occasionally longer intervals than a quartan, and sometimes shorter intervals than a day: last spring there was a case of *septan* ague in this Hospital, and a case of *double tertian*, in which the patient had two fits every other day. The *change of type*, which intermittents undergo, is another point worthy of your attention, and is well illustrated by the cases in the Hospital; tertians may become quotidians, and *vice versa*, and both quartans, and *vice versa*. With a patient in George's Ward the ague was at first tertian, then quartan, then quotidian: a patient in Ann's Ward had tertian ague for five weeks, it then became quotidian. Sometimes there is an irregularity or deficiency in the stages; occasionally no cold fit, and at other times no sweating: there is a case in Isaac's Ward, in which the man had no cold fit. Shenkius relates a case where the three stages were reversed, beginning with sweating and ending with shivering.

There is no rule for the hour of invasion. Cullen, and those he followed, say, that quotidians occur in the morning, tertians at noon, and quartans in the evening. However, this is quite unfounded; the cold fit in the case of tertian in Isaac's Ward, came on sometimes in the morning, and sometimes in the evening; and with the case of quotidian ague, in Edward's Ward, it first occurred at three p. m., and latterly at midnight. The peculiar countenance in this disease is well illustrated in the cases now in the Hospital; it is of a straw colour, from a clear and light to a dark and dirty straw colour; and you will also observe the combination of internal disease with some of the patients: in two in George's Ward, hepatitis was also present. The liver, spleen, lungs, or head, are often affected; but the liver and spleen are the most frequent seats of disease, and the latter viscus often becomes enormously enlarged. Jaundice is common with ague, of this we had lately an instance in George's Ward; anasarca often occurs, independent of visceral obstruction; and rheumatism is sometimes present with ague, although it more

frequently occurs afterwards, which induced the old writers to assert that the bark had got into the bones.

Agues become continued fever, if the causes of continued fever are also applied, and not otherwise. The return of ague from particular causes is well illustrated by these cases in the Hospital; the east wind, with cold and wet combined, are the most common causes. There is a case in King's Ward in which the patient was cured, and the ague returned when the man got wet. The next point of information to be deduced from the cases under consideration is—that ague attacks all ages; of the eleven patients in the Hospital, five are of one family, a father, mother, and three young children. I have often seen it occur in children at the breast; it has happened at birth, and often before birth. Dr. Russell, the author of the History of Aleppo and the Plague, has related a case in which the mother had tertian ague; the child *in utero* shook on intermediate days, and both were cured by the mother taking bark. The child was cured one paroxysm earlier than the mother. The cases also illustrate the *cause* of agues; all the patients came from marshy places, three from near Whittlesea-mere, seven from Kent, and one from near Tower Hill.

The great increase of disease is shown by the cases. Before last year I never admitted more than about twelve in the whole year, but last year I admitted forty-four cases, and this year I have already admitted sixty cases. Formerly, ague raged like a plague, in London, and in 1558 the dead were so numerous that the living could not bury them. Sydenham says, that ague was the most fatal disease in London from 1661 to 1665. The fire took place in London in 1666, after which it was rebuilt, and probably from being better drained, ague became less prevalent; the further improvements in draining have gradually reduced ague, yet weather which favours miasmata will always cause an increase as at present, and as from 1677 to 1685, when, as Sydenham tells us, ague revived; and from 1751 to 1754, as remarked by Dr. Fothergill.

The improvement which has taken place in the treatment of ague is very remarkable. *All* the cases to which I have referred in this Lecture are cured. Formerly great numbers died; Oliver Cromwell and James I. fell victims to this disease. I have had nearly two hundred cases of ague under my care, all of which have been cured by the exhibition of the sulphate of quinine. The usual dose is from three to five grains, three or four times a day; but the best mode is to give a large dose (*ten grains*) as soon as the paroxysm is over, and this will cure the disease at once; it is best afterwards to give smaller doses every six or eight hours, by which means we ensure a permanent removal. Sometimes the ague will not yield to less than thirty grains in the twenty-four hours, and this is the utmost extent to which I have prescribed quinine. There is a case in Ann's Ward in which a woman had quotidian for several weeks, and it was cured by one large dose of the quinine. I have no hesitation in affirming, that if quinine ever fail, it is because it is not given in sufficiently large doses, and not frequently enough repeated. Bark, after getting fame lost it, till Sydenham ventured to give it in large doses, and thus (although he was called a daring quack by his brethren) re-established its use. It is true that small doses of the quinine will often stop the disease, if very mild, and especially if the patient be removed from the unhealthy spot; but there is no reliance to be placed on them, or indeed upon any doses, unless continued for some time (a fortnight or three weeks) after the disappearance of the symptoms, precisely as is the case with syphilis, the secondary form of which, after mercury, occurs commonly when mercury is relinquished, as soon as or soon after the local symptoms disappear. For as the morbid state of the system exists in both, before symptoms arise, so does it continue after the symptoms have disappeared. A fresh exposure to the miasma cannot but be expected to bring back the disease, as much as a re-application of venereal virus will produce disease after the perfect cure of syphilis. In conclusion, Gentlemen, I would remark to you, that many of the cases of ague which I have treated were combined with severe internal inflammation, and with visceral affection; but these offered no impediment to the cure of the disease by the quinine. There is a patient in King's ward who laboured under hepatitis with ague; he was cupped, &c. and quinine given at the same time, and both affections were thus cured together: so with a man in George's ward, who had hepatitis with jaundice. There is an old proverb that "Ague in spring is fit for a king," and Boerhaave says that agues lengthen life—"ad longævitatem disponunt." However, this is erroneous; agues should always be stopped immediately, for they certainly do shatter the constitution, and if other affections co-exist with ague they yield more readily if the ague be cured, and the quinine, which cures it best, interferes with no other measures.

LONDON MEDICAL SOCIETY.

Monday, October 22d.

Dr. Shearman in the Chair.

The minutes of the preceding evening having been read, and the names of visitors announced, Dr. Burne commenced the discussion by reading from a paper some observations on *Retention of Urine and its Consequences in cases of Adynamic or Typhus Fever.* He said that there were two conditions of the bladder which occasionally happened in fever, and to which especial attention should be paid—the one was when, with a general relaxation of the muscular power, the bladder in common with other parts lost its tone, and the urine flowed away unconsciously; this was to be regarded as an indication of alarming prostration. But sometimes the calls of nature to empty the bladder from the general loss of sensibility in fever were not perceived, or not attended to by the patient, and the bladder becoming enormously distended, then retention of urine and its consequences ensued: the ureters and pelves of the kidneys became loaded, the secretion of urine was diminished, and effusion into the ventricles of the brain usually took place. In the latter stages, that is, when the bladder had been fully distended for some time, a partial flow of the urine might happen, and this circumstance Dr. Burne noticed as one liable to deceive the medical attendant. These cases required relief from the introduction of a catheter, and this Dr. B. said must be different from common cases; there was no aid derived even from the abdominal muscles, and the bladder was to be emptied on the simple principle of hydraulics, as in a lifeless body. Dr. Burne related two cases of retention of urine occurring during the progress of fever; with the one case, occurring in a man, the catheter was introduced as the patient was lying in bed, and little or no urine was obtained; the case ended fatally, and upon examination the bladder was found greatly distended, and there was extensive effusion in the ventricles of the brain. In the second case, which happened in a young lady, and also proved fatal from ventricular effusion, the patient was placed on her side at the edge of the bed, and then turned upon her belly, and in this manner the urine flowed. However, the lady sunk soon after removing the excitement, a circumstance which Dr. B. remarked was common in the tapping of ascitic patients, and also in the latter stages of peritonitis, where the abdomen was tympanitic, when the patients very speedily sunk after the bowels were freely relieved.

Mr. Lloyd considered that pressure above the pubes was at all times sufficient for the emptying of the bladder; he thought it was unnecessary to disturb the patient so much as to place him upon his belly, and indeed he did not think that according to the principles of hydraulics simply, that the turning of the patient upon his belly was the best method of emptying the bladder, the urethra not being then in the most depending situation. With respect to the effect of retention of urine, as stated by Dr. Burne, namely, effusion into the ventricles of the brain, Mr. Lloyd said he had examined many cases of retention of urine after death and had not found this result, and he believed that in the cases related by Dr. Burne the effusion in the ventricles of the brain was the cause of the retention of urine, and not the converse, as Dr. Burne had stated.

Dr. Burne replied to Mr. Lloyd, by observing that in common cases of retention of urine as from stricture, the patients did not die with the bladder full, this symptom being attended to, whereas in fever it was overlooked. That effusion in the ventricles of the brain might produce retention of urine, he did not deny; but in the two cases which he had related the effusion was confined to the ventricles, there was none under the arachnoid. He had examined no case of fever fatal from effusion, in which there was not effusion under the arachnoid membrane, nearly equal in quantity to that contained in the brain. With respect to pressure above the pubes being sufficient to empty the bladder after the introduction of the catheter, he would observe that in one of the cases which he had spoken of, (he could not speak confidently of the other) pressure was had recourse to, but without effect.

Mr. Lloyd said that his observations particularly applied to cases of retention of urine following injury to the spine.

Mr. Callaway entirely concurred with Mr. Lloyd as to the efficiency of pressure above the pubes in emptying the bladder; he thought that Dr. Burne should have noticed the paralysis of the bladder in cases to which he had alluded, as arising from over distention of that viscus, and not from a general failure of muscular power. He hoped that such cases were not frequently seen as the sequelæ of fever, for he thought it an odium on the medical attendant not to discover the retention of urine, and relieve it in an early stage.

The president, Dr. Shearman, said that it was important to ascertain whether the effusion in the brain arose from ischuria vesicalis or from ischuria renalis; it was his own opinion that it did not arise from the former, but in those cases where the secretion of urine was stayed, it would seem that

the surface of the ventricles performed a vicarious office with the kidneys, and fluid having an urinous smell was secreted. Dr. Stewart inquired whether the fact of a vicarious secretion was well established? To which Dr. Shearman replied, that Sir H. Halford had related a case in the Transactions of the College of Physicians, and he himself had seen one or two cases which he thought established the point.

Mr. Lloyd doubted the fact of urine being secreted in the brain, he should as soon expect bile to be secreted. He thought that the urine was first secreted in the kidneys, then taken up by the absorbents, and ultimately deposited in the brain.

A Member called the attention of the Society to the remark of Dr. Burne, that a distended bladder produced a diminished secretion of urine; now, whatever cause produced this, it was, he thought, manifest the effect would be the same. If the abdomen were highly tympanitic, as in the latter stages of fever, he could readily conceive that pressure above the pubes would be insufficient to empty the bladder.

Mr. Procter admitted there were many cases in which position favoured the exit of urine from the bladder; in some diseases of the uterus, the patient urinated with more freedom when placed on the knees in bed. He could not suppose that the cases of retention of urine to which Dr. Burne had alluded were very frequent, for he thought the same cause which relaxed the expelling muscular force of the bladder, would in the same proportion deprive the sphincter muscle of power, and the urine would flow away involuntarily. The cases related by Dr. Burne, he thought died from fever, and not from retention of urine; he would ask Dr. B. what distinct proof there was that such was not the case?

Dr. Burne replied that the man had died unexpectedly, and was found on examination to have his bladder enormously distended; in the second case, of the young lady, a fresh train of symptoms came on after irregularity in passing the urine. He had remarked, that this patient died soon after the excitement of a distended bladder was removed, and this was frequently the case where the abdomen was tympanitic in the latter stages of peritonitis or puerperal fever. Hence probably turpentine, and other stimulating purgatives, were useful in such cases.

Mr. Callaway said that Sir E. Home had related some cases of stricture where the bladder was greatly distended, and being unrelieved, the ureters, pelves, and infundibula of the kidneys, became enormously dilated: these patients died of serous apoplexy, and it would appear that here was a vicarious action with the kidneys. He had read a case in some Journal, where the patient died from excessive gin drinking, and a fluid was found in the ventricles of the brain, having the smell and taste of gin.

A Member said that the case alluded to by Mr. Callaway, was under the care of Sir A. Carlisle at the Westminster Hospital—the fluid found in the ventricles certainly did taste of gin.

Mr. Waller thought that the fact of gin being found in the brain in these cases, from analogy, proved the truth of the doctrine of absorption with respect to the urine. He remembered that when he attended Dr. Currie's Lectures, the Doctor was in the habit of saying, that some old women took so much gin that it could not pass off, but was absorbed and carried into the system, and if a candle were brought near them, "they would catch fire." He had been called to draw off the urine in many cases of partial paralysis of the bladder, following tedious and difficult labours, and had always found pressure above the pubes sufficient to empty the bladder, although in many cases the abdomen was tympanitic.

Mr. Lloyd thought that the act of frequent and violent straining in cases of stricture, occasioned a determination of blood, and this accounted for the cerebral symptoms. Suppression of urine, he contended, was not a necessary consequence of the ureters and kidneys being distended, for there were cases on record, in which large quantities of urine were secreted, although the kidneys had become dilated to a mere bag.

Dr. Burne asked how it was that in cases of constipated bowels, as frequently occurred in females, "*straining*" did not induce serous effusion in the brain. He thought there was no case on record of absorption of the kidneys, except where there was a continued and permanent opposition to the passage of urine. He was satisfied that a great sympathy existed between the brain and urinary organs; he had seen two cases lately where the patients experienced violent pain at the back of the head, during a lessened secretion of urine; but the pain was removed with the restoration of the secretion.

Dr. Blick said, that retention of urine would not produce enlarged ureters and dilatation of the apparatus of the kidneys, because when the bladder was distended to the utmost, then absorption of the urine took place. And he said that Mr. Abernethy was of opinion, *there was no necessity even for passing a cathether, as the bladder became relieved by absorption!*

Mr. Lloyd *warmly* denied that Mr. Abernethy held or expressed such an opinion as had been stated by the previous speaker. Mr. Abernethy had said, that in a healthy state the bladder would not burst, but that

inflammation came on, then sloughing and ulceration, and an opening was formed. He, Mr. Lloyd, would ask why, if Mr. Abernethy had thought the bladder would relieve itself, did he write upon the best mode of puncturing the bladder, and why he had practised this operation in so many cases.

Mr. CALLAWAY said, that he was not satisfied as to the proof of urine being absorbed. Mr. Calloway related an experiment of Sir A. Cooper on the spirit of turpentine: he immersed his arm in a jar of this fluid, which was placed on the outside of the apartment, so that he (Sir A. Cooper) could not possibly receive any portion by inhalation, and the result was, that the urine did not smell of turpentine; from which Sir Astley inferred that turpentine was carried into the system by inhalation.

The absorption of urine was contended for by Dr. Burne, and again by Dr. Blick; the former observing that the absorption of bile, after its formation, and impediment existing to its passage, was analogous. A short discussion ensued between Mr. Gossett and Mr. Lloyd, on the enlargement of the kidney—as to whether the kidney was simply enlarged and attenuated, or whether its cortical substance was in part actually absorbed.

In conclusion, Mr. CALLAWAY related a very interesting case, which he said had lately occurred in the practice of a friend. The patient was a female, who had passed no urine for several days; she had a large tumour at the lower part of the abdomen, which was supposed to be the bladder distended; repeated attempts were made to pass the catheter, but all were unavailing; there evidently being something firmly pressing on the meatus, and impeding the passage of the instrument. The poor woman died on the following day in a comatose state; and upon examining the body, there was found to be most extensive carcinomatous disease of the uterus and parts adjacent, so that a large tumour was formed, occupying the whole cavity of the pelvis, and pressing upon the ureters, so as completely to impede the passage of the urine. The ureters above this were enlarged so much, that the finger could readily be introduced; the pelvis of each kidney was also enormously dilated, as well as the infundibula; the cortical substance of the kidney gone, and merely a capsule left. There was very extensive effusion into the ventricles of the brain: the patient had for some time complained of pains in the loins and down the thighs, and was supposed to have disease of the womb. The bladder was empty, and very much pressed upon by the tumour.

WESTMINSTER MEDICAL SOCIETY.

THE first meeting of this Society took place on Saturday evening, and was very fully attended. Dr. Webster in the chair. After a variety of private business had been gone through, and the election of office-bearers for the present session concluded, Dr. Milligan briefly related the history of two cases of enlargement of the spleen, which was so much increased in size, as to extend from the cartilages of the false ribs to the hypogastric region, and where a tumour also existed in the right side of the abdominal cavity, apparently from the swelling of the mesenteric glands. These enlargements were the result of remittent and intermittent fever, under which the children had, for some time previously to his visiting them, laboured. In these cases, after he had failed in reducing the bulk of the swellings by the use of calomel and other means, he had found the greatest benefit from the employment of iodine, which he administered in the form of tincture three times a-day. This medicine, which seems to have so wonderful a power in reducing every diseased or even healthy structure, and more particularly when of a glandular nature, of which he conceived the spleen partook, had produced a rapid absorption of the tumours.

A trivial discussion then took place, as to the propriety of denominating the spleen a *gland*, and in how far it differed in structure from the thymus, whose use, like its own, was altogether unknown.

Dr. SIGMOND observed, that the term was derived from the ancient physicians, who applied it to any part of the human body resembling an acorn or a nut, and that Celsus most particularly applied the word "*glans*" to the spleen.

Mr. MAYO called the attention of the Society to two interesting cases of injury of the vertebral column, at present in the Middlesex Hospital. In the most severe of these, the patient had fallen from a great height, and struck his back against a plank, and immediately after the accident, had been deprived of the powers of motion and sensation in his lower extremities. On examining the spine, the spinous process of the ninth dorsal vertebra was found to be projecting two or three inches beyond its proper level, a circumstance which induced him to believe, that a fracture of the body of the vertebra had been effected, in which case it was probable that the spinal marrow must be very much compressed, and perhaps reduced to that state of fluidity which he had often found in similar instances, which resembled a mixture of blood and starch. By the accident, paralysis of the bladder had

been produced, which rendered the use of the catheter necessary. The case is, at present, going on well; but as inflammation of the spinal marrow and its membranes must have been produced, and be still continuing, its issue must be considered to be very doubtful. In the mean time, however, the paralysis was less complete, as he now felt his limbs warm, and that they were appended to his body. In the other case, the injury which had been applied to the superior portion of the sacrum, was of a much less violent nature, and had produced symptoms of a less severe, though of a similar character.

Dr. James Johnson thought, that the first case might, perhaps, turn out, from the great projection of the spinous process, and the consequent displacement of the body of the vertebra, to be one in which the spinal canal is completely obliterated, which would be a fortunate occurrence, as only two cases of the kind were on record, where patients had survived such an injury.

Mr. Lambert begged to remind the Society of a case of a similar kind, which had occurred in Guy's Hospital under the care of Mr. Key, where the tenth dorsal vertebra had been fractured and much displaced, and where extension had been employed for the purpose of reducing it to its proper position, a practice which had been a good deal ridiculed in the Borough. He also called the attention of the Society to a curious circumstance in the history of injuries of the spine, viz. the frequent occurrence of disease of the bladder, and other urinary organs. In about twenty cases which he had seen of death from injuries of the spine, in all of them, inflammation and thickening of the coats of the bladder, and the production of ammoniacal urine had occurred, and, indeed, the patients appeared to die from the disease of the urinary organs.

Mr. Dillon did not think the ammoniacal state of the urine, a necessary consequence of disease or accidental injury of the spine, having seen cases where it did not exist. From having, in many instances, in cases of retention from strictures, and other causes, where there was no disease of the spine, found the urine strongly impregnated with ammonia, he was inclined to think that the presence of the alkali was more to be attributed to a decomposition of the secretions in the bladder, from it being allowed to remain there too long, which he feared was too often the case, than to any influence of the injury over the functions of the kidney.

Dr. Sigmond was inclined to agree with Mr. Dillon, that as complete a decomposition of the urine does take place in the bladder, under the circumstances mentioned, as in any other receptacle for it; and it was very plain from those most generally used for that purpose, that as soon as the acids called cystic were separated, ammonia, which by the experiments of Vauquelin, Cruikshank, and others, was proved to be the component part of urea, was evolved.

The House Surgeon to the Middlesex Hospital, in answer to a question, said that the water was drawn off in the case of Mr. Mayo's patient three times a day.

Mr. Lambert was a little astonished to hear these opinions. In many of the cases which he had seen, some of which had been under the treatment of Mr. Key and Mr. Travers, in Guy's and St. Thomas's Hospitals, and where the greatest attention had been payed to them, and where the urine had been regularly evacuated three times a-day, these symptoms had, nevertheless, invariably occurred. He thought it a little extraordinary, that the history of Mr. Dillon's cases should differ so much on this important point.

Mr. Rose thought, that the fact of ammoniacal urine being secreted after injuries of the spine, was now fully established; Sir Everard Home had paid, several years ago, in St. George's Hospital, great attention to this subject. He had, at first, supposed that the production of ammonia must be the consequence either of allowing the urine to stagnate in the bladder, or from the continued use of the same catheter, which might have become foul. He had, however, found, that when a clean catheter was regularly introduced three times a-day, ammonia was still evolved; and that when the catheter was retained continually in the bladder, the quantity of ammonia was greatly increased, probably from its stimulating the kidneys; and even, in some cases where the urine flowed involuntarily from the bladder, the moment it was secreted, Dr. Prout had found it to contain ammonia in a free state. He had therefore been convinced, that the derangement in the urinary organs was the consequence of the injury of the spine.

Mr. Mayo thought, that the occurrence of death in these cases was sufficiently accounted for, by the ramolissement of the spinal marrow, without ascribing it to the disease of the bladder.

Dr. Johnson said, that he should like to hear the opinions of the members respecting Mr. Iliff's case of spontaneous paraplegia,* which was read at the *London Medical Society*. It had been published, and probably all the members had read it.

No discussion, however, took place relative to this case, owing to the hour of adjournment (ten o'clock) having arrived.

* In the report of this case, there was an omission, which shall be supplied in our next Number.

MEDICO-CHIRURGICAL SOCIETY.

B. Travers, Esq. President.

The Society again met on Tuesday evening, and, after much preliminary business, proceeded to hear the continuation of Mr. Lawrence's paper on Erysipelas, which contained a great many decisive cases in favour of the treatment by blood-letting and incision.

A great number of cases, and several where the disease had attained a great extent, in which blood-letting was employed to the amount of twenty ounces and upwards, and this repeated frequently when necessary, were related, in which the severity of the symptoms had been immediately relieved, and the further progress of the disease arrested. These cases afforded instances of the efficacy of this plan of treatment in erysipelas of almost every part of the body, and in some of them it had been attended with the happiest results, even where the disease was of considerable standing. Mr. Lawrence had employed the evacuation of blood in constitutions of every kind; and the history of two or three patients was given, where it had exerted a powerful benefit even in the gouty and dissipated. In one very bad case of erysipelas of the head and face, where coma had been induced, the bleeding was carried to a very great extent in the course of a few days, and seemed, undoubtedly, to be the means of saving the patient's life.

A young man, who had laboured for some time under a stricture of the urethra, was, a few days previous to his admission into St. Bartholomew's Hospital, exposed to the influence of damp and cold, and soon after was attacked with a painful swelling in the groin, and erysipelas rapidly developed itself. On his reception into the Hospital, it had extended over the groin, part of the abdomen, and the front of the thigh. The constitutional disturbance attending it was great; pulse strong and quick; headach; nausea and other febrile symptoms; blood-letting was freely employed in conjuction with the use of saline medicines and purgatives. These remedies produced an immediate effect on the disease; its further progress was arrested, and the patient recovered without the occurrence of suppuration, or any of the ordinary bad consequences of erysipelas.

A young woman, who had been the subject of gonorrhœa, had a severe shivering after being exposed to cold, which was followed by pain and swelling of the side of the neck; and on her admission into St. Bartholomew's Hospital, the erysipelatous inflammation had attacked the head, face, and neck; and the constitutional disturbance corresponded to the extent of the disease. In this case, also, the complaint yielded rapidly to the same plan of treatment.

In one patient suffering from erysipelas of the head and face, where the pulse was very variable in point of strength, and in which stupor had been induced, the evacuation of blood was attended with great relief; and, indeed, in all the severe cases of the disease related by Mr. Lawrence, wherein it affected the head, and where stupor and coma had succeeded, the evacuation of blood had exerted a very powerful and beneficial influence. The only instance narrated in which the plan had not proved ultimately successful was in the following unique case.

A middle aged gentleman came from the country to London, for the purpose of consulting Mr. Lawrence about a stricture of the urethra, under which he had long suffered, and about his general health, which from attacks of gout and other causes had got into a bad state. Mr. Lawrence recommended to him great attention to his diet, and restricted him to a small quantity of wine, which he formerly indulged much in; but on two occasions after his arrival, in company with his friends, he partook freely of the pleasures of the table, and soon after he was attacked with hardness and swelling in the situation of the submaxillary gland; erysipelas rapidly appeared, and extended over the neck, shoulder, and breast. He also became affected with a great degree of difficulty of respiration. Blood-letting was freely employed, in conjunction with saline mixture, calomel, &c. The erysipelas, however, increased, and the difficulty of respiration became remarkably severe, and one morning he jumped out of bed almost in a state of suffocation. The bleeding was repeated several times, and every means which Mr. Lawrence or Dr. Tweedie, who was called in at Mr. Lawrence's request, could suggest, without effect, and the patient died. On dissection the disease was found to be very extensive. The cellular structure was found thickened and gorged with serum, but no pus had been formed excepting a small quantity near the submaxillary gland, the original seat of the disease. The most curious circumstance, however, which the dissection revealed, was the fact of the disease having extended along the pleura lining the sternum, to the pericardium. Between the layers of the anterior mediastinum and those of the pericardium, there being effused a large quantity of serous fluid.

The other cases, which also were numerous, pointed out the efficacy of long incisions in cases of a severe kind, and which

had resisted previous blood-letting; and instances were mentioned where they had been practised in every portion of the body. They had been employed of various lengths according to the extent of the disease. Mr. Lawrence had generally made only one incision, which was carried through the centre of the inflamed surface nearly its whole length; in two cases he had divided the integuments of the lower eyelid, in several those of the head. He had treated one case of erysipelas occurring during pregnancy according to this plan, and with the best result. One case was narrated where an incision not less than fourteen inches had been made in the inferior extremity, and with the most decided and instantaneous benefit; and some cases were read, in which it had been necessary to make an incision on each side of the limb. On cutting through the skin, Mr. Lawrence had generally found thickening of the cellular structure, which had in most of the instances become of a green colour, with copious effusion of serum.

The reading of these cases, which were very numerous, and as far as they went, of decisive importance, seemed to make a great impression on the audience.

Dr. Babington begged to inform the Society, that since its last meeting, he had seen the surgeon of Greenwich alluded to by Mr. Brodie, who was in the habit of treating erysipelas by making numerous punctures with the lancet. He had had a good deal of conversation with that gentleman on the subject, who had informed him, that in his practice it had proved very successful. His patients had generally been the old, and frequently the weak. He was in the habit of employing punctures in all cases of erysipelas, whatever part of the body was the seat of it. He made a great many punctures with the point of the lancet in one circumscribed spot, and these were repeated frequently. The punctures resembled the dotting of a pen on paper. They generally gave exit to a quantity of serum. But antiphlogistic treatment had not been combined with their use, quite the reverse. His patients being the old and weak, required, in his opinion, the use of stimulants, and he had given bark, wine, diluted spirits, and, in some cases, pure spirit itself, where the patient had long been addicted to its use, and with great effect. No bad consequences had ensued from the practice of punctures at Greenwich.

Mr. Copland Hutchison was glad to find by the reading of this paper, and the subsequent discussion, that the principles which he had made known, had been so much approved of by many of those who were present, and particularly by the author of the paper; but he differed from Mr. Lawrence on the expediency of making such long incisions. The plan recommended by himself was, to make several small incisions, varying from one to two inches in length; but, on all other points, his practice corresponded to that of the author. The efficacy of making incisions was now duly appreciated in Edinburgh, where it had received a very extensive trial.

Mr. S. Cooper wished to know from Mr. Lawrence, whether he meant to inculcate the necessity of making incisions in cases of erysipelas, where neither suppuration nor sloughing had occurred. He could not, he must confess, see the necessity or expediency of making incisions at all, and he decidedly condemned the plan of making them to such an extent as that of fourteen inches. He, for one, would never attempt such a practice, till he had had more experience of its benefit. He had seen two cases of erysipelas treated, according to Mr. Hutchison's plan, in St. Bartholomew's Hospital, soon after the promulgation of his views; in these the practice had not proved successful; and he had heard of two cases wherein the employment of them had proved fatal; in one of them from the shock, in the other from hæmorrhage. He could not, therefore, agree with Mr. Lawrence's conclusions, as to the uniform success of the measure, and he saw no reason why so severe a plan should be adopted, when milder means would probably answer as well.

Mr. Lawrence wished it to be decidedly understood, that the practice of making incisions was employed by him in the early stage of erysipelas, and for the obvious purpose of preventing the occurrence of suppuration and sloughing. He by no means meant to state, that erysipelas could not be cured without them; but this was the decided result of his experience, that it saved the patient a vast deal of suffering, prevented extensive sloughings and sphacelus, and the consequent loss of motion in the arm, from the contraction of the cicatrix. He thought it much better to make one incision of considerable length, than a great many of less individual extent. The sum total of which, as Mr. Cooper had jocularly computed, would amount to more than the length of his single incision, both because this plan was more successful, and because it saved the patient a great deal of pain.

Dr. Roots was not sorry that he had been absent at the last meeting, otherwise he might have been tempted to make an incision on the scalp of a lady, who was then under his charge, and who had done very well without it. He bore testimony to the truth of Mr. Lawrence's views, in consider-

ing erysipelas an inflammatory disease, and of the general propriety of the antiphlogistic practice; but he, at present, could not see the use of making large incisions when the disease could be cured, and, as he thought, as effectually, without them.

A Gentleman, whose name we did not learn, called in question the originality of the practice, so far as it had been claimed by Mr. Hutchison. It has long been the custom among the shepherds in his part of the country, to make incisions in the hand and fingers when affected with erysipelatous inflammation, excited by some disease of the udder of the cow. He called to Mr. Lawrence's recollection the statements of a gentleman, whom Mr. Lawrence had not mentioned, Dr. Buttler, who, in his cases of irritative fevers, has borne ample testimony to the efficacy of incisions.

Dr. A. T. Thomson could by no means understand how erysipelas could be considered as of a pure inflammatory nature, since he was aware of no phlegmonous disease which followed its course, or was attended with the same febrile characters. He spoke of the propriety of making distinctions in certain cases, and of occasionally employing stimulants; and he seemed to be decidedly averse to the practice of incision.

Mr. Mayo, in a few words, stated his belief of the general propriety of treating erysipelas *without* blood-letting; which generally yielded, in his hands, to the use of medicine, and *local* applications to the *part*.

The President stated, that the hour for separating had now arrived, but he thought it would be proper, considering the vast influence the paper, coming, as it did, from so high an authority as Mr. Lawrence, and also appearing among the transactions of that society, would have on the public, and as many members were still anxious to deliver their opinions on the subject, that the society should resume the discussion on the next occasion.

Mr. Lawrence observed, that if the suggestion of Mr. Travers was adopted by the society, he would, for the present, waive the right of reply, which he believed was generally conceded to the author of the paper.

The society was then adjourned. The audience was again numerous, and the paper seemed to excite a deeper degree of interest than we recollect to have observed on any former occasion.

THE LANCET.

London, Saturday, October 27, 1827.

Although the articles which occasionally appear in the public papers on medical politics, are calculated rather to retard than accelerate the progress of medical reform, in consequence of the want of information on such affairs by their non-professional authors, yet we invariably hail their publication with the greatest satisfaction, from a conviction that they must have the effect of rendering a reform more decided, and more effectual, when the period shall arrive for its consummation. It is therefore with much pleasure, but not unmingled with regret, that we have read two or three articles which have recently found a place in *The Times*. The writer evidently entertains the best wishes for the success of our cause, but obviously is not well informed, relative to the manner in which it can be most easily and efficiently obtained. The articles in question we will publish on a future occasion, with such comments as they seem to require; we should not have alluded to them this week, cramped as we are for space, were it not to avert the pernicious consequences that might otherwise result from the following statement, if allowed to remain uncontradicted or unexplained, proceeding as it does from such an influential journal, "The pupils themselves are so utterly and stupidly careless, where the object of passing an official examination is not concerned, that a man so eminent and able as Dr. Cholmondeley, Physician at Guy's Hospital, has rarely more than one or two students to attend his clinical lectures at the patient's bed side; the most really efficient class of lectures that can be given, and by the most competent instructor." So far are the pupils from "being utterly and stupidly careless," we venture to affirm that there is not to be found in the British dominions a body of

young men more persevering, more unremittingly industrious, or who acquire more information in the same space of time.

Few can form a correct notion of the difficulties they have to contend against, or the obstacles they have to surmount; and, so far from their being regardless of clinical instruction, it is a species of knowledge for which they seek with an insatiable appetite. We do not deny that Dr. CHOLMONDELEY, when he delivers a clinical lecture, has an exceedingly small class; nor do we profess to feel any surprise at that circumstance. The editor of *The Times* will recollect that there is a vast difference between possessing information, and possessing the power to *communicate* that information. Dr. CHOLMONDELEY is a most able physician, but at the same time a most wretched teacher; his oral discourses are not only destitute of attraction, but are so frigid and pointless, that they are calculated to repress, if not disgust, the inquiring ardour of a youthful mind. Let it not, therefore, be credited that medical students are inattentive to clinical lectures, when delivered by *competent* teachers. And let not the lazy officers of our public Hospitals regard the statement in *The Times* as any excuse for the non-performance of their duty to the neglected pupils.

THE public and the profession are looking forward with intense anxiety to the decision of the Middlesex Magistrates, (who meet the 1st of the ensuing month,) on the subject of a COUNTY LUNATIC ASYLUM. An impression generally prevails that such an institution will be forthwith erected. The Magistrates can no longer doubt that an establishment of the kind is imperiously demanded—humanity, science, and economy, alike call aloud for its adoption; the cruelties practised on the hapless paupers in some of the private asylums, are of so atrocious a nature, that the blood is chilled at their recital. Letters upon letters reach us daily, with fresh accounts of these inhuman and villanous practices. We abstain, however, from giving publicity to individual acts of cruelty, lest it might add to the wretchedness of those who are already tortured by the recollection that they have relatives who are enduring the miseries of these pestilential bastiles. If the magistrates were members of the medical profession, there would be no difficulty in convincing them that there is not a single valid objection which can be offered against the erection of a County Asylum, or that a single argument, deserving the slightest consideration, can be advanced in support of the present system. Is it rational that those who have to treat insanity should *profit* by a *continuance* of the disease? Under the influence of such a principle, the most feeling mind might become brutalised, and every humane feeling yield to unrelenting avarice. Are human beings to be treated in a manner that a man would not treat his *cattle*? What gentleman would send his horses or his dogs to an infirmary under a contract to pay 50 per cent. more, whilst they remained there in a state of disease, than he could support them for at home, either in health or disease! Again, would he send them to a place for the purpose of being cured, where no classification is observed, and where the conductors of the establishment are as ignorant of the diseases they profess to treat, as the horses themselves? It is now as well known that insanity is caused by disease of the brain, as that blindness results from inflammation of the eye; and by judicious treatment at an early period of each complaint, that one disease may be as easily cured as the other. This statement is not advanced without due consideration; doubtless its accuracy will be denied by many, and it will surprise more, but nevertheless it is true. If the magistrates still doubt what has been advanced on the subject of insanity, or if they attribute the writings of any of the

parties to personal pique against the conductor of some lunatic establishments in the neighbourhood of this metropolis; if they still are inclined to believe that insanity cannot be *prevented* in thousands of cases, and *cured* in hundreds; then we say, let them solicit on the day of their meeting the attendance of Drs. SPURZHEIM and HASLAM, gentlemen who have hitherto taken no part in the discussion, and whose abilities and disinterestedness do not admit of question. In an affair of such vast public importance, we are most anxious to refrain from making any and every allusion which can prove personally offensive in any particular quarter. If, however, the magistrates through obliquity of judgment, or any other cause, should fail to perform a most important part of their duty, we will resume the investigation of this subject, and no earthly consideration shall deter us from making disclosures which must convince the legislature of the necessity of its immediate interference.

MR. STOCKER, of Guy's Hospital, desires us to state, that no portion of the funds subscribed for the portrait of SIR ASTLEY COOPER, ever came into his possession, and that he knows nothing of the matter. Mr. STOCKER is a highly respectable man, and we assure him, as far as we are concerned, that his integrity has not been questioned.

WE suppose it is unnecessary to apologise to our readers for presenting them occasionally with an *additional sheet*, for which they will perceive that neither last week, nor on the present occasion, have we made any extra charge. We must frankly state that it is rather an act of necessity than one of kindness, as materials are continually flowing to us from so many sources of information, that the ordinary limits of our Journal are altogether inadequate to their reception. Our table at this moment is absolutely covered with valuable communications, which we find it impossible to insert; and, independently of the articles from Foreign Journals, Reviews, Hospital Reports, Communications from private sources, the proceedings of Medical and other Societies, we have no less than one hundred and thirty Lectures belonging to the courses now publishing, which we must compress into the volumes of the present year: nevertheless the price will not exceed that of the volumes for the past year. We take this opportunity of intreating our Correspondents to be as *brief as possible* in their communications, and invariably to adopt as their motto "*multum in parvo.*" We have this week received an article of not less than twenty sides of foolscap closely written; it was really unreasonable to expect that it could be inserted without mutilation.

SEVERAL pupils of Bartholomew's Hospital loudly complain of the conduct of the persons who have the superintendence of the dead-house; *subjects* are constantly examined without any previous notice, and the students are thus deprived of the most valuable source of professional investigation. It is an act of inexcusable neglect on the part of the surgeons, that they do not adopt some plan for the better regulation of this important branch of pathological research.

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Library of Useful Knowledge.—Preliminary Essay on the Objects, Advantages, and Pleasures of Science.—Hydrostatics. 1827. Baldwin, Cradock, and Joy.

Library of Useful Knowledge.—Animal Mechanics. The Perfection of Design in the Bones of the Head, Spine, and Chest, shown by Comparison with Architectural and Mechanical Contrivances. 1827. Baldwin, Cradock, and Joy.

The Blunders of a Big Wig; or PAUL PRY'S *Peeps into the Sixpenny Sciences.* 1827. Hearne, Strand.

THE tracts which we have placed at the head of this article, furnish many topics for reflexion, some for criticism: the two first, as their titles inform us, form part of a series of similar productions, intended to be published by "the Society for the diffusion of Knowledge," and if the forthcoming numbers equal their predecessors in *accuracy*, the corrigenda and errata are likely to be almost as numerous as the pages of the work itself. The two first Numbers of the book of knowledge, as it is called, have been generally attributed to a great lawyer, who, not satisfied with leading in the senate and at the bar, seeks to fabricate a claim to the reputation of being a universal genius, and to prove to the community that he is as intimately acquainted with the minutiæ of arithmetic, mathematics, &c., as he confessedly is with law, criticism, and politics. But there is an old adage, "*Non omnia possumus omnes*," the truth of which our would-be Crichton has found out by this time. He appears to have made a sad exposé of his scientific attainments. It is bad enough to have his blunders shown forth by such critics as Mr. Paul Pry, but it is rather too bad to have them paraded before the public, and the subscribers to the "Sixpenny Sciences," as they have been in the last Numbers, as if the "men of knowledge" had conspired to exhibit the incapacity of their leader.

Two instances out of many that may be cited, will suffice to show what a great deal of science there may be outside a big wig. We are very seriously told, "that the power which attracts bodies towards the earth, varies with the distance exactly with the squares, lessening as the distance increases; thus at two miles from the earth it is four times less than at one mile, at three miles nine times less, and so forth;" these are the words, the *ipsissima verba* of this expounder of the Newtonian philosophy. Thus (to use the elegant paraphrase of Mr. Paul Pry,) "A Billingsgate having placed a basket at her knees, or a third of her altitude, finds that it there weighs 36 pounds; she then elevates it two-thirds of her altitude, knowing that it will there weigh but nine pounds; but still finding it too heavy, she places it by the next effort on her very tip-top, and finding it only four pounds weight, marches off with joyful alacrity, crying, '*Eels, live eels, O!*" To lighten the burdens of the labouring poor, is a work truly worthy of him who seeks to enlighten the understandings of the community at large. But what shall we say of the man who suggests a plan for adding to the apparent weight of commodities, and enabling shopkeepers and traders to trick their customers. By this notable expedient, which is described at considerable length, "The weight of a vessel containing water (spirit or any other fluid may doubtless be substituted) may be increased, although nothing whatever is added to or made to touch it." Our philosopher, not content with this, blunders on most manfully, turns topsy-turvy any little stumbling-blocks that common sense may throw in the way of his paradox, and actually supposes a case in which, by a simple contrivance or apparatus, *four ounces of water may be made to weigh fifty-two ounces—si sic omnia!!* Paul Pry's remarks on this and several other parts of the lawyer's essays, are well deserv-

ing of attention: this dry sarcastic humour gives considerable effect to the point of his criticisms.

The part of the "Book of Knowledge" which we propose to analyse, is written with the object of pointing out "the perfection of design in the bones of the head, spine, and chest, shown by comparison with architectural and mechanical contrivances." The writer further undertakes to prove,

"That the foundation of the Eddystone lighthouse, the perfection of human architecture and ingenuity, is not formed on principles so correct, as those which have directed the arrangement of the bones of the foot; that the most perfect pillar or king-post is not adjusted with the accuracy of the hollow bones which support our weight; that the insertion of a ship's mast into the hull is a clumsy contrivance compared with the connexions of the human spine and pelvis; and that the tendons are composed in a manner superior to the last patent cables of Huddart, or the yet more recently improved chain-cables of Bloxam."

So many of the illustrations are taken from naval architecture, the diction also abounds so much in sea-phrases, that we at first supposed the author to have been by profession a seaman, or to have spent some part of his life in the study of naval tactics. He speaks with the greatest fluency of "tacking and steering," of "swaying the ship," of "Finland boats, and Dutch doggers," whilst "cables, hawsers, and strands," form the main story of his tiny edifice. Our supposition, however, appears to have been erroneous; the reputed author has domiciled the greater part of his life in Edinburgh and London, in which places, he doubtless acquired his information in naval affairs, but not by inspiration, as we shall presently show.

The author appears, to us at least, to have borrowed almost all his illustrations from Dr. Arnott's Elements of Physics. With this we should not find the least fault, if any acknowledgment were made for the obligation, or even mention made of the work. This too may be palliated under other circumstances, or in an individual of less pretension. It may be said, that a writer is not required to fortify himself with authorities, when writing a short popular tract. But when we find, at the end of this essay, a list of the books given, from which information has been obtained by the author, or may be acquired by the reader; and when, moreover, we find the author to be a man of great piety and purity, so far as can be inferred from the tone in which he begins and ends his essay, we should have expected, at least, some notice of the book from which he derived the only attractive and instructive parts of it. Such an omission is objectionable in any writer; it is unpardonable in one who professes to have no other object in view than that of extending far and wide the boundaries of knowledge. If the reader will but carry his eye along the following passages, he will be enabled to determine how far our author has done justice to his readers, in suppressing the best source of information that could be laid open to them—to the writer, whom he almost literally transcribes—to those principles of which he makes a parade, and which should have taught him to "render unto Cæsar the things which are Cæsar's."

We are informed, that the best illustration of the form of the head is the dome. "A dome is a vault rising from a circular or elliptic base; and the human skull is, in fact, an elliptic surmounted dome, which latter form means, that the dome is higher than the radius of the base." The man of knowledge then says,—

"It is obvious enough, that the weight of the upper part of the dome must disengage the stones from each other which form the lower circle, and tend to break up their joinings, and consequently to press or thrust outwards the circular wall on which it rests. No walls can support the weight, or rather, the lateral thrust, unless each stone of the dome be soldered to another, or the whole hooped together and girded. The dome of St. Paul's has a very strong double iron chain, linked together, at the bottom of the cone; and several other lesser chains between that and the cupola, which may be seen in the section of St. Paul's engraved by Hooker."

Farther on, he proceeds as follows,—

"We may here notice an opinion that has been entertained, in regard to the size of animals. It is believed that the material of bone is not capable of supporting a creature larger than the elephant, or the *mastodon*, which is the name of an extinct animal of great size, the osseous remains of which are still found. This opinion is countenanced by observing that their bones are very clumsy, that their spines are of great thickness, and that their hollow cylinders are almost filled up with bone.

"It may be illustrated in this manner:—A soft stone projecting from a wall may make a stile, strong enough to bear a person's weight; but if it were necessary to double its length, the thickness must be more than doubled, or a freestone substituted; and were it necessary to make this freestone project twice as far from the wall, even if doubled in thickness, it would not be strong enough to bear a proportioned increase of weight: granite must be placed in its stead; and even the granite would not be capable of sustaining four times the weight which the soft stone bore in the first instance. In the same way, the stones which form an arch of a large span must be of the hardest granite, or their own weight would crush them. The same principle is applicable to the bones of animals. The material of bone is too soft to admit an indefinite increase of weight; and it is another illustration of what was before stated, that there is a relation established through all nature, and that the very animals which move upon the surface of the earth are proportioned *to its magnitude*, and the gravitation to its centre."

"In order to demonstrate the advantage which, in the structure of bones, is derived from their cylindrical form, a diagram is given, with a view to point out the effect of a force applied so as to break them. If a bone or a piece of wood be made to rest horizontally,

According to Dr. Arnott, p. 191,—

"The great domes of churches, as those of St. Peter's in Rome, and St. Paul's in London, have strength on the same principle as simple arches. They require to be strongly bound round with chains and iron bars at the bottom, to counteract the horizontal thrust of the superstructure."

"Strength," says Arnott, "depends on magnitude, form, and position, as well as on the natural adhesion of materials.

"Suppose two blocks of stone left projecting from a rock that has been hewn, of which blocks one is twice as large, and deep and broad, as the other. The larger will by no means bear as much more weight attached to its end than the small one, as it is larger. Hence, if any such projection be carried out too far, it breaks off, or falls by its weight alone."—p. 181.

"Even in granite, which is the strongest of rocks, there is a limit in these particulars; and if any elevation more remarkable than now exists on earth, were by any chance to be produced again, the law which we are considering would prune the monstrosity"—p. 182.

"Again, the size of vegetables is obedient to the same law, and animals furnish other interesting illustrations of it. The giants of the heathen mythology could not have existed upon this earth, for the reason we are now considering. Many have doubted whether the mammoth could have lived on dry land, or whether he must have been amphibious, that his great body might be generally borne up by the water"—p. 185.

Dr. Arnott thus treats the same subject, "In longitudinal compressions (where a weight presses on the top of a pillar,) the weight can only destroy the support by crushing it, and crushing is the most difficult mode of breaking. Hence a very small

supported by its two extremities, and if a weight be attached to its centre, the inferior surface will be torn asunder, whilst the superior is crushed.

"The writer *lately* observed a good demonstration of this:—a large tree was blown down, and lay upon the ground; to the windward, the broken part gaped; it had been torn asunder like the snapping of a rope: to the leeward side of the tree, the fibres of the stem were crushed into one another and splintered; whilst the central part remained entire. This, we presume, must be always the case, more or less; and here we take the opportunity of noticing why the arch is the form of strength. If this transverse piece of timber were in the form of an arch, and supported at the extremities, then its whole thickness, its centre, as well as the upper and lower parts, would support weight by resisting compression."

pillar, if kept perfectly straight, will support a great weight; but if the pillar begin to bend, it resists only with part of its weight. The reason is, that by the bending of the pillar, the whole weight is supported on the atoms of the *concave side only, which are therefore in danger of being crushed, whilst those on the convex side are in danger of being torn asunder.*" p. 186.

Lately! In the summer of 1827, when trees were torn up by the roots, and riven by the wind, and their foliage scattered by the pitiless storm!!—There is something graphic in this. Some people have a habit of embodying a precept into a tale; others transform a truism into a case, giving it a "local habitation and a name," and palm it on others as if it had a real existence, though it was nothing but the creature of their own fertile imaginations.

The author proceeds ringing changes on Arnott as follows:—

"If we look down upon the bones of the foot, we shall see that they form a complete circle horizontally, leaving a space in their centre. These bones thus form three different arches—forward; across; and horizontally: they are wedged together, and bound by ligaments, and this is what we alluded to when we said that the foundations of the Eddystone were not laid on a better principle; but our admiration is more excited in observing, that the bones of the foot are not only wedged together, like the courses of stone for resistance, but that solidity is combined with elasticity and lightness.

"It was a beautiful problem of the kind, (the determining by calculation the best form of beams, joists, &c.,) which Mr. Smeaton, the engineer, solved, &c., perfectly in the Eddystone light-house. He had to determine the form and dimension of a building which should stand firm on a sunken rock, in the channel of a swift ocean tide, exposed to the fury of tempests from every quarter."—p. 192.

Again:—

"There is another curious circumstance in the form of the thigh-bone, showing how it is calculated for strength as well as freedom of motion. To understand it, we must first look to the *dishing* of a wheel—the dishing is the oblique position of the spokes from the nave to the felly, giving the wheel a slightly conical form. When a cart is in the middle of a road, the load bears equally upon both wheels, and both wheels stand with their spokes oblique to the line of gravitation."

"The wheel of a carriage is a very nice piece of workmanship, simple as it appears to us from our extreme familiarity with it. It acquires astonishing strength, indeed, (that of the arch,) from what is called its dished form; and that form is further useful in this, that when the carriage is on an inclined road, and more of the weight, therefore, falls on the wheel on the lower side, the under spokes of that wheel become nearly perpendicular, and thereby support the increased weight more safely." p. 176.

It is rather curious to observe how nearly the sketch given to illustrate this principle resembles that by Arnott, p. 115. Our animal mechanician having merely surmounted his cart with two rustics, as if to diversify the scene.

We again distinctly repeat that we do not impute it as a fault to the writer of this tract, that he made a free use of the materials to be found in a good book—far from it. Neither should we have thought it very censurable if in a sixpenny production he omitted all mention of authorities, or writers. But when we find him adding a list of the books he recommends as giving information on the subject he treats, suppressing even the title of that from which in our opinion he appears to have taken the most instructive part of his Essay, we feel constrained to notice the omission, and to give our readers an opportunity of judging of the motive which prompted it.

This tract opens with a very solemn introduction, and closes appropriately enough with a serious sermonizing peroration. The list of books may be considered as an Appendix. It savours somewhat of puerility to quote as authorities in anatomical subjects such writers as Derham, Fenelon, and Ray; excellent men, no doubt, in their proper sphere, but here rather out of place. Why not quote some of those who have treated the subject *ex professo*? Are there not some living authorities who may be named? And is not "a living man better than a dead missionary?" So at least that *practical* philosopher Robert Gourlay once said on a memorable occasion, and to no less a person than the President of the Knowledge Society.

Cant has been defined to be "a pretension to piety which the speaker feels not." It was the style of the covenanters—of the commonwealths-men of old. Who can forbear to smile on reading the canting preachments of their Harrisons and Bradshawes, who could not indite a letter to one another without interlining it with scripture phraseology? We laugh at their extravagance, though we must admire their devotion to the cause they espoused—and surely those who come after us, in whatever light they may view "the men of knowledge," their present measures and future consequences, can scarcely avoid smiling at the grotesque mixture of psalm-singing and demonstration of twaddle and exposition that run in such ludicrous contrast throughout their productions. "Truly I think that he who prays and preaches best will fight best." It may not be altogether out of character for a military saint to quote scripture for a precept in the art of war, but it is rather ludicrous for "a man of knowledge" to cite Paley and Fenelon as authorities in anatomy. The man of war (Harrison) labouring in his vocation did not disdain to use the "word of the spirit," and the modern "man of knowledge" resorts to the sly insinuations of cant; "and of all the cants that were ever canted in this canting world the cant of hypocrisy is the worst." We said at the outset that these tracts furnished several topics for criticism and reflection. We have used our wonted freedom in both, but our limits prevent us from proceeding further, though the subject is far from being exhausted.

Conversations on Anatomy, Physiology, and Surgery. By Archibald Robertson, M.D. &c. &c. 12mo. pp. 446. Buchanan, Edinburgh, and Highley, London, 1827.

Whoever has spent a winter in that nursery of M.D.'s, Modern Athens, must be already well acquainted with the *parroty* productions of this colloquial author, for few, we should think, have passed through the ordeal of the imposing examinations, without at least undergoing a six months preparation by those *omniscient* gentry denominated "*grinders*," who, whether from being in league with this their paper brother, or because he saves them a vast deal of trouble,

generally contrive to instil into the mind of the young aspirant the necessity of storing his mind with the logic of Robertson. As long as that character pursued his system of trickery in a dead language, we considered him to be a harmless animal, and we even thought that his productions might be useful in teaching the classical scholar how to understand the barbarous latinity of a *Home* or a *Graham*; but since he has now thrown off the cloak which concealed his numerous deformities, and has assumed a garb calculated to mislead the young or ill informed, it becomes necessary to hold him up in his native colours. The *work*, independent of numerous and gross anatomical and surgical inaccuracies, evinces throughout a great deficiency in that knowledge, which has been derived from the labours of the anatomists and physiologists of the Continent, without a due acquaintance with which it is in vain for any one to write on the subjects of which he has treated. Secondly, it is manifest that none of his statements are derived from his own personal observations, but are almost completely, and indeed, we think, nearly verbatim, copied from Monro and Fyfe, authors many centuries behind the present state of the science. To these very great and insurmountable deficiences we may add, that the descriptions are given without any system or order, which to the student is of the most material consequence in assisting his memory; and the excellency of which (to compare great with small) has rendered the works of Cloquet so invaluable.

Besides, however, these glaring and fundamental faults, the plan of question and answer is excessively ill-adapted for teaching the student anatomical knowledge, which can only be properly acquired by a severe and systematic study. Whoever learns from such a childish production as this, ought to consider himself in no way removed, in point of intellect, above the parrot—and let him be well aware, that though he should be able to have the whole work by heart, which we very much doubt the power of any one to do, he will, in a very short time, forget every atom acquired in such a contemptible way. The author, too, aware of his own deficiencies, and that his catechism could only be perused by the most uneducated readers, has thought it prudent to accentuate every Latin word: thus, "canalicŭli lachrymāles," "tunica sclerotica," &c. &c., which we consider nothing less than an insult to every properly educated mind; and we strongly recommend to those, requiring such assistance, for ever to abandon not only the author, but also the profession of medicine.

Of the general plan, object, and poverty of the author, let the following serve as a specimen:—

"Q. What are the two parts of which the human body is generally said to be composed?

A. The solids and fluids.

Q. How are the solids divided?

A. Into hard and soft parts.

Q. What are denominated hard?

A. The bones and cartilages.

Q. What soft?

A. The muscles, viscera, and all other parts"!!!

To attempt to expose all the blunders, which are every where to be found, would occupy more space than we can possibly afford, we must therefore content ourselves with a few:—

"Q. What is the structure of the corpora cavernosa (of the penis)?

A. Their internal structure is reticulated, and divided into *cells*, which are very similar to the *cancelli* in the extremities of long bones, and communicate very freely with each other; among these *cells* the arteries are copiously dispersed, and pour their blood into them, distend them, and thus produce an erection of the penis."

Now, although this may be the opinion of Fyfe and Monro, of the structure and use of the corpus cavernosum, it is completely incorrect; for, instead of cells there only exists a great plexus of small veins, forming what has been denominated by the French, "the erectile tissue."

"Q. Describe the relative situation of the lobules (lobes) of the liver.

A. The lóbŭlus spigelii being the *largest* is situated near the spine, &c.; and the lobŭlus anonymus, or quadratus, is a *small* portion of the right lobe, between the fossa ductus venosi and the gall-bladder."

Here is another glaring anatomical blunder; since the lobulus anonymus instead of being the smallest, is by far the largest of the subdivisions of the right lobe of the liver.

"Q. What are you to understand by a bursa mucosa?

A. It is a bag, or shut sac, placed most frequently under the tendons of muscles."

A bursa mucosa is, in general, a shut sac, but very often it is not; thus the superior bursa of the knee communicates with the cavity of that joint.

"Q. Describe the inguinal canal?

A. ——— The whole of this inguinal canal is about an *inch* in length."

Now every one knows that it varies in length from one inch and a half to two inches.

"Q. What kinds of exostosis are there?

A. The *scrofulous* and the *venereal*."

These are distinctions never to be found in practice, and are entirely founded on erroneous views of disease.

But it would be endless for us to point out all the inaccuracies with which the work abounds, for these are to be met with in almost every page. Nor can we conscientiously recommend any but those destitute of intellect or education to derive knowledge from such a contemptible work.

EXCISION OF THE LOWER JAW. BY MR. HODGSON, OF BIRMINGHAM.

A FRIEND informs us that Mr. Hodgson, of Birmingham, has recently removed the inferior maxillary bone, in consequence of its being the seat of an osteo-sarcomatous growth, which threatened suffocation. The subject of this bold and interesting operation is a Miss R——s, ætat. 30, tall, and apparently in good health. Six years since she perceived a fungous tumour which occupied the cavity left on extracting one of the bicuspides on the right side. This continued to increase in spite of all means employed for its destruction till it filled up the cavity of the mouth, and protruded the cheek to an equal extent, reaching from the right ramus of the jaw to the left incisor tooth, and threatened suffocation. Under these distressing circumstances the removal of the jaw seemed the only means likely to save her life. She acquiesced to the proposition of an operation, and Mr. Hodgson, with proper assistants, dexterously performed the operation on the 2d inst.

He commenced by making an incision through the left angle of the mouth, along the greatest convexity of the tumour to the base of the ramus on the opposite side. He then divided the jaw opposite the first or second bicuspis, and again above its right angle, dissected away its internal attachments, and all the difficulty was surmounted: many vessels were secured, and but little blood was lost. The integuments were united by suture, and were nearly healed on the tenth day. The operation lasted nearly an hour. A considerable hæmorrhage came on in the night, which threatened to extinguish life; this was, however, restrained, and the patient is recovering, with perfect articulation and ability to act, and with much less deformity than prior to the operation. Her general health was but little affected.

ON THE USE OF MAGNESIA IN CASES OF POISONING. BY JOSHUA BROOKES, ESQ. F. R. S., &c.

To the Editor of THE LANCET.

SIR,—Many months ago I troubled you with a case of poisoning by oxalic acid, which was successfully treated, accompanied by some observations on the use of the stomach pump in other instances of poisoning. That paper has not yet appeared in your pages, and its publication will now be rendered unnecessary, in consequence of other communications on the subject which I hope at a future period to lay before the public.

It ought to be universally known that Mr. HUME, a few years back,* published a case of poisoning by *arsenic*, in which the subsequent exhibition of magnesia was attended with complete success.

Another† instance has likewise been recorded by a medical practitioner, who also saved the life of an unfortunate female by the same simple remedy, acknowledging the practice from Mr. Hume's example.

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* Medical and Physical Journal, December, 1821.

† Idem, by Mr. Edwards, December, 1822.

Many cases have occurred, and subsequently to the publication of these two fortunate instances, where, if we believe newspaper reports, this remedy was totally neglected, possibly from ignorance of its ever having been employed. I think, therefore, the utmost notoriety should be afforded to a fact of such importance: and to promote this desirable object, I beg to solicit the aid of the extensive circulation of your valuable pages.

I may hereafter request to intrude on your Journal, having some extensive observations to offer on the same subject; but fearing that even a day might be lost, I have ventured to promulgate this brief notice, in order that the public may know that if MAGNESIA be injected into the stomach by means of the pump it will render either *arsenic*, *oxalic acid*, or *corrosive sublimate*, innoxious, (*i. e.* if disorganisation have not already been produced.)

Mr. Hume's method of administering magnesia in these deplorable cases, is by giving frequent and copious doses, with a few drops of laudanum.

I remain, Sir,
Your obedient servant,
JOSHUA BROOKES.

Blenheim Street, Great Marlborough-street,
23d October, 1827.

HOSPITAL OF SURGERY,

Panton Square, St. James's.

CASE OF SCIRRHOUS CONTRACTION AND ULCERATION OF THE ŒSOPHAGUS.—INTERESTING POST-MORTEM EXAMINATION.

M. SACHE was admitted three weeks ago in a very weak and emaciated state, and with that peculiar sallow and anxious countenance, which almost invariably attends carcinomatous disease, for an almost complete obstruction to the swallowing of food, which, as soon as it had passed down a certain length in the œsophagus, was immediately rejected with violent, painful, and spasmodic vomiting. She complained of constant and acute pain in the situation of the lower dorsal vertebræ, to which point she referred the obstruction, through which no solid could be transmitted, and frequently not even the thinnest fluid. Her respiration was perfectly natural, and no tumour could be detected at any part of the chest, or in the situation of the cardiac or pyloric orifices of the stomach. Her general health had suffered much. She was continually under the influence of febrile excitement, and (to use her own expression) had become a perfect skeleton. Stated, that two years ago, she for the first time, and without any assignable cause, experienced a slight degree of difficulty in deglutition, which gradually, though at first very slowly, increased, and was distinctly referrible to the lower part of the œsophagus. During the last few months this obstruction had proceeded to its present complete state with alarming rapidity, and the pain, febrile symptoms, weakness, and emaciation, had increased in a corresponding degree. She had tried every kind of internal remedies at different times without the least benefit, opium being the only medicine which afforded her any relief. On passing a small bougie down the œsophagus, a very firm contraction was discovered near its lower part, through which no instrument could be introduced into the stomach. After the use of the bougie, she experienced a very severe degree of pain, accompanied with nausea and vomiting. The bougie was used several times, but without passing through the obstruction, and it caused much pain and uneasiness; its employment was therefore given up. She was ordered to swallow as much beef tea as possible, and had frequent doses of laudanum; but she would not consent to receive nourishing enemata, which Mr. Wardrop recommended. She was able occasionally to swallow a small purgative pill. In this state she continued gradually to sink, and at length appeared to die of pure exhaustion.

On dissection, at which Dr. Barry and Mr. Bennett were present, a very firm contraction of the œsophagus was found at that part which lay on the 10th dorsal vertebra, and which was produced by a thickening of the whole coats of that tube, which had at this point completely lost their natural texture, and had assumed the fibro-cartilaginous structure, which is the sure indication of strumous disease. For two inches below the stricture, the mucous coat was in a state of great ulceration, which at one point had extended through all the coats, and also the layer of the posterior mediastinum, and thus communicated with the cavity of the right pleura. This ulceration was of a very ragged and irregular kind, and the granulations of a greenish appearance, and the sanies which exuded, had a very fetid odour. On the surface of the base of the right lung, corresponding to the opening in the mediastinum, was a small ulcer, which was very superficial, extending only through the pulmonary pleura; around this ulcer was effused a little lymph. No effusion existed in the cavity of the chest, and the lungs were in other respects healthy. The bowels were remarkably empty, and the stomach exhibited that hour-glass con-

traction, which has been described by Sir Everard Home, Wardrop, and others.

It is rather a curious circumstance in this case, that no fluid should have escaped through the ulcer of the œsophagus into the cavity of the pleura.

ST. THOMAS'S HOSPITAL.

ULCER OF THE CORNEA.

P. J., a sailor, ætat. 41, admitted into Luke's Ward on the 6th of September, under the care of Mr. Travers, on account of disease of the right eye.

Upon examination, there was found to be an ulcer of the cornea, of about the size of the blunt end of a probe—it was of an irregularly oval shape, of considerable depth, and immediately in the centre of vision. On looking at it closely with a glass, it was seen to be smooth, having a glazed appearance, as though it were covered by the tunica conjunctiva, and the edges were rounded. The cornea, generally, was hazy; there were no red vessels perceptible, passing to the ulcer, but there was considerable vascularity of the conjunctiva, as well as of the sclerotica; the patient said, that he experienced but slight pain, and had no sensation of extraneous bodies in the eye—a symptom present in a very remarkable degree, where the edges of the ulcer are jagged. The account which the patient gave was, that his eye had been affected upwards of a fortnight, that it became inflamed spontaneously, and that he had not had recourse to any medical assistance.

Mr. Travers directed twenty leeches to be applied to the temple and forehead; a lotion, composed of one grain of the nitrate of silver to an ounce of distilled water, to be applied to the ulcer daily, by means of a camel-hair brush. Two drachms of the sulphate of magnesia, ten drops of dilute sulphuric acid, with ten drachms of the infusion of roses, three times a-day.

15. Less vascularity of the eye, but the ulcer of the cornea indolent. The ulcer to be gently touched with a fine pointed caustic pencil.

19. The ulcer of less depth—it has the same smooth appearance, as described on admission. The cornea is now tolerably clear, but for some time after the application of the caustic, it was loaded and hazy. Continue the use of the solution of nitrate of silver.

27. The ulcer is certainly diminished in size since the last report, but appears to be increased in depth at one minute point. Mr. Travers directed the extract of belladonna to be applied around the eye, and a solution of lunar caustic (*two grains* to an ounce of water) to be applied daily. A dose of the decoction of bark, with tincture, to be taken three times a-day, and a pint of porter allowed daily.

October 7. The ulcer materially diminished: it is now only a minute point, but surrounded, as it were, by an opaque halo, the remaining portion of the cornea being perfectly clear.

The same measures were pursued, until the patient left the Hospital, about a week after the last report; there only remained, at that time, a very small opaque spot on the cornea.

On Friday last, Mr. Travers performed the operation of amputation above the knee, on a man who had received most extensive injury to the leg, it being literally crushed to pieces. The poor fellow had fallen from a height of twenty-five feet; and, in addition to this, a heavy body of iron fell upon his leg.

GUY'S HOSPITAL.

OPERATIONS BY MR. KEY AND MR. MORGAN

The three following operations were performed on Tuesday last, at this Hospital.

1st. *Removal of a Scirrhous Tumour from the Mamma.*—The patient in this case was a female about forty years of age, and had only been for a short period in Dorcas Ward of this Hospital. The tumour, which was very hard, and situated on the outer side of the left breast, was of four years standing: the woman had borne children, and had suckled them with the diseased breast, the youngest being seven years old. She had not ceased to menstruate; in fact, the catamenial discharge was present at the time of the operation. Mr. Morgan made two elliptical incisions, including the diseased mass, and then dissected out the tumour: two arteries only were secured, the edges of the wound held together by a suture, and the patient removed to her bed. Some time having elapsed, and no further bleeding occurring, the wound was closed with broad strips of adhesive plaster.

There was one important step in the operation which particularly deserves comment, namely, that during its performance pressure was made on the subclavian artery and in consequence there was but slight hæmorrhage; two vessels only, as we have remarked, being secured. It does not occur to us that any systematic writer on surgery has recommended pressure to be made on the subclavian artery, during the extirpation of the mamma, or removal of tumours there-

from, nor do we remember to have seen it adopted by any other operator than Mr. Morgan. The practice certainly has great advantages, for, as Mr. M. justly remarked to the pupils, at the bed-side of the patient, it not only prevents an immediate loss of blood, but the blood being impeded in its passage through the numerous vessels distributed to the mamma, the mouths of these vessels contract, and hence render the application of ligatures in a great degree unnecessary. Mr. Morgan further observed, that he had witnessed operations for the removal of tumours from the breast, not larger than the one under consideration, where no pressure was made, and where in some instances it had been found necessary to apply nearly twenty ligatures to bleeding vessels.

2d. *Removal of an Indurated Tumour, from the Ligamentum Patellæ.*—The particulars of this case are as follow:—the patient, a woman about thirty-seven years of age, has been for several weeks in Dorcas Ward, under the care of Mr. Key, on account of a very firm tumour in the situation of the ligamentum patellæ; it was of the size of a china orange, very hard and unyielding, but tender if strong pressure were made upon it, so that it interfered with the patient's kneeling, and effectually prevented her from pursuing her ordinary avocations. The account which the woman gave was that she had had swelling at this part upwards of seven years; that she at first received a wound on the top of the knee, and the swelling shortly ensued; the part had been repeatedly blistered and leeched, but with no effect; it was occasionally painful, as was the case at the time of admission. Mr. Key's opinion as to the nature of the case was—that the tumour commenced in the bursa, which after having undergone repeated attacks of inflammation, eventually, with the subjacent cellular tissue, became consolidated, and constituted the swelling in question. Mr. Key directed blisters, and subsequently the moxa, to be applied to the tumour, but it continued in the same state, and therefore Mr. Key finding that he could not stimulate the parts to absorption, and fearing from its proximity to the joint, to lay open the tumour, and induce an ulcerative or sloughing process therein, he determined on removing it by excision.

A free cut was made through the integuments, and the tumour, which was found to be very firmly connected to the ligamentum patellæ, was dissected out. A section was made of the part—the greater mass was of a yellowish colour, and of cartilaginous hardness, at one portion there was a very thick cyst of about the size of a nutmeg, and containing firm cheesy matter: this was supposed to be the remains of the bursal cyst.

3d. *Excision of a Tumour from the back part of the Thigh.*—The tumour was situated about one third of the way upward from the popliteal space, at the back of the thigh, and evidently beneath the fascia; the patient a middle-aged man, and the swelling of long standing.

A longitudinal incision was made through the skin, when the tumour was found to be very intimately blended with the fascia, and continuing the dissection it was also ascertained that a portion of the muscle was involved in the disease: it became necessary therefore carefully to remove the whole of the adjacent parts. A section of the diseased mass showed its inner portion to consist of a soft brain-like matter—evidently, as Mr. Key observed, the commencement of malignant disease.

TO CORRESPONDENTS.

Communications have been received from the following correspondents:—Crito—Mr. Verbecke—Dr. Taylor—Mr. Merry—Mr. Garden—Clifton—Mr. Youatt—Mr. Hargrave—Mr. Dillon—Mr. Geo. Bailey—Another Borough Student—M. R. C. S.—A Constant Reader—H. C.—Mr. Morgan—Mr. Dewhurst—Dr. Alexander, Manchester—Mr. Colvan—F. R. C. S. L.—Δ.—An Old Subscriber—Mr. Simpson—Mr. King, Bath—J. S—R. E.—Tyro—D. D.—M. F.—Mr. Campbell—R. Y.—D. E., Birmingham—Celsus—Mr. Rae—Mr. M'Kervor—M. R——y—Mr. Baird—H. A. B.—Non Medicus—Mr. Ganly—J. G.—Mr. James—Alpha—Mr. Tullidge—Dr. Penneck—A Pupil of the London Hospital—A Hater of Villany—Quiz—Mr. Richards—Pseudadelphomastix—Elentheros—Portora—Wintonensis—Mr. Snaith.

LITERARY NOTICE.

Dr. Armstrong is preparing for the press, an octavo volume on the Remote Causes, Prevention, Nature, and Treatment, of Diseases of the Stomach, Liver, and Bowels. This work, which will appear in the spring, will be preceded by a series of coloured drawings in 4to., with copious text, illustrative of the morbid anatomy of the stomach, liver, and bowels. They will be published in Six Monthly fasciculi, each containing about five plates accurately coloured from nature. The First Number will be ready early in December.